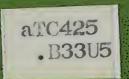
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## WATERSHED PLAN

AND

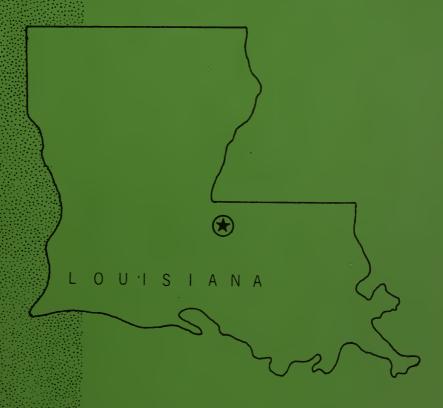
## ENVIRONMENTAL IMPACT STATEMENT

FOR

PREVENTION, AND DRAINAGE

## BAYOU GROSSE TETE WATERSHED

Pointe Coupee Parish, Louisiana



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### PART I

## WATERSHED PLAN

FOR

WATERSHED PROTECTION,
FLOOD PREVENTION, AND DRAINAGE

## BAYOU GROSSE TETE WATERSHED

Pointe Coupee Parish, Louisiana



PART I

AUG 251976

CATALOGING - PREP.

WATERSHED PLAN

BAYOU GROSSE TETE WATERSHED Pointe Coupee Parish, Louisiana

Prepared under the Authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666), as amended, and in accordance with the National Environmental Policy Act of 1969, Section 102(2)(C), Public Law 91-190.

Prepared by:

Upper Delta Soil and Water Conservation District

Pointe Coupee Parish Police Jury

With assistance by:

United States Department of Agriculture Soil Conservation Service Forest Service

United States Department of the Interior Fish and Wildlife Service

State of Louisiana
Wild Life and Fisheries Commission
Department of Public Works

February 1976



### 448387

#### PART I - WATERSHED PLAN

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#### WATERSHED PLAN AGREEMENT

between the

## UPPER DELTA SOIL AND WATER CONSERVATION DISTRICT Local Organization

## POINTE COUPEE PARISH POLICE JURY Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

State of Louisiana

and the
Soil Conservation Service
United States Department of Agriculture
(hereinafter referred to as the Service)

Whereas, application has heretofore been made to the Secretary of Agriculture by the Sponsoring Local Organization for assistance in preparing a plan for works of improvement for the Bayou Grosse Tete Watershed, State of Louisiana, under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress; 68 Stat. 666), as amended; and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Service; and

Whereas, there has been developed through the cooperative efforts of the Sponsoring Local Organization and the Service a mutually satisfactory plan for works of improvement for the Bayou Grosse Tete Watershed, State of Louisiana, hereinafter referred to as the watershed plan, which plan is annexed to and made a part of this agreement;

Now, therefore, in view of the foregoing considerations, the Sponsoring Local Organization and the Secretary of Agriculture, through the Service, hereby agree on the watershed plan, and further agree that the works of improvement as set forth in said plan can be installed in about 10 years.

It is mutually agreed that in installing and operating and maintaining the works of improvement, substantially in accordance with the terms, conditions, and stipulations provided for in the watershed plan:

- 1. Except as hereinafter provided, the Pointe Coupee Parish Police Jury will acquire with other than PL-566 funds such land rights as will be needed in connection with the works of improvement (estimated cost of \$797,900).
- 2. The Pointe Coupee Parish Police Jury assures that comparable replacement dwellings will be available for individuals and persons displaced from dwellings, will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971 and the Regulations issued by the Secretary of Agriculture pursuant thereto. The costs of relocation payments will be shared by the Sponsoring Local Organization and the Service as follows:

	Sponsoring Local		Estimated Relocation	
	Organization	Service	Payment Costs	
	(Percent)	(Percent)	(Dollars)	
Relocation Payment	72	28	-0- <u>a</u> /	

- <u>a</u>/ Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost-shared in accordance with the percentages shown.
- 3. The Sponsoring Local Organization will acquire or provide assurance that land users or water users have acquired such water rights pursuant to State law as may be needed in the installation and operation of the works of improvement.

4. The percentages of construction costs of structural measures to be paid by the Pointe Coupee Parish Police Jury and by the Service are as follows:

	Sponsoring		Estimated
Works of	Local		Construction
Improvement	Organization	Service	Cost
	(Percent)	(Percent)	(Dollars)
Channel Work with Water Control and Grade Stabilization Structures	25	75	1,610,400

5. The percentages of the engineering costs to be borne by the Pointe Coupee Parish Police Jury and the Service are as follows:

Works of	Sponsoring Local		Estimated Engineering	
Improvement	Organization	Service	Cost	
	(Percent)	(Percent)	(Dollars)	
A11	0	100	112,800	

- 6. The Pointe Coupee Parish Police Jury and the Service will each bear the costs of project administration which each incurs which is estimated to be \$17,720 and \$320,580, respectively.
- 7. The Upper Delta Soil and Water Conservation District will provide assistance to land users to assure the installation of the land treatment measures shown in the watershed plan.
- 8. The Upper Delta Soil and Water Conservation District will encourage land users to operate and maintain the land treatment measures for the protection and improvement of the watershed.

- 9. The Pointe Coupee Parish Police Jury will be responsible for the operation and maintenance of the structural works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.
- 10. The costs shown in this agreement represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.
- 11. This agreement is not a fund obligating document. Financial and other assistance to be furnished by the Service in carrying out the watershed plan is contingent on the appropriation of funds for this purpose. A separate agreement will be entered into between the Service and each affected Sponsoring Local Organization before either party initiates work involving funds of the other party. Such agreement will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.
- 12. The watershed plan may be amended or revised, and this agreement may be modified or terminated only by mutual agreement of the parties hereto except for cause. The Service may terminate financial and other assistance in whole, or in part, at any time whenever it is determined that the Sponsoring Local Organization has failed to comply with the conditions of this agreement. The Service shall promptly notify the Sponsoring Local Organization in writing of the determination and the reasons for the termination, together with the effective date. Payments made to the Sponsoring Local Organization or recoveries by the Service under projects terminated for cause shall be in accord with the legal rights and liabilities of the parties. An amendment to incorporate changes affecting one specific structural measure may be made by mutual agreement between the Service and the Sponsor (s) having specific responsibilities for the particular structural measure involved.
- 13. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

- 14. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964 and the regulations of the Secretary of Agriculture (7 C.F.R. 15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any activity receiving Federal financial assistance.
- 15. This agreement will not become effective until the Service has issued a notification of approval and authorized assistance.



UPPER DELTA SOIL AND WATER CONSERVATION DISTRICT  FOR BOX A  Man Monda, La 70760  Address Zip Code	Date March 16,1976
The signing of this agreement was aut body of the Upper Della dock and adopted at a meeting held on The Secretary, Local Organization	Local Organization
POINTE COUPEE PARISH POLICE JURY Local Organization	By Adam J. Marlin Title President
body of the Sointe Compact	bate hanch 9, 1976  horized by a resolution of the governing  Local Organization
Adapted at a meeting held on has Secretary, Local Organization  Date Frank 9, 1976	Drawer J. J. 70760  Address Zip Gode



Appropriate and careful consideration has been given to the environmental impact statement prepared for this project and to the environmental aspects thereof.

Soil Conservation Service United States Department of Agriculture

Approved by:

Alton Mangum State Conservationist

MAR 1 8 1976

Date



#### PART I

# WATERSHED PLAN BAYOU GROSSE TETE WATERSHED POINTE COUPEE PARISH, LOUISIANA February, 1976 Summary

This is a plan for the Bayou Grosse Tete Watershed which encompasses about 137,000 acres in the southern part of Pointe Coupee Parish, Louisiana. Land and water resource problems in the watershed consist of floodwater, drainage, erosion, and sediment. The Sponsoring Local Organization is the Upper Delta Soil and Water Conservation District and the Pointe Coupee Police Jury.

A planned program of land treatment consists of measures necessary to adequately treat 50,200 acres of cropland and pastureland which includes 400 acres of wildlife food and cover planting for upland wildlife habitat.

Forest land treatment includes wildlife habitat management on 6,150 acres and improvement cutting on 2,000 acres. Forest fire protection will be continued on all 50,900 acres of forest land.

The Upper Delta Soil and Water Conservation District will provide the overall leadership necessary for the application of this land treatment program.

Structural measures will consist of 115 miles of channel work with appurtenant structures. The work will include 102 miles of excavation on existing channels, 3 miles of excavation of new channels, 1 mile of clearing and shaping, and 9 miles of clearing only.

The watershed plan proposes an installation period of 6 years for the structural measures. The total installation cost is estimated to be \$7,351,700 of which Public Law 566 funds will bear \$2,075,580 (about 28 percent), and other funds will bear \$5,276,120 (about 72 percent). Land treatment measures will cost approximately \$4,492,300 and the structural measures will cost about \$2,859,400.

Land users will maintain the land treatment measures on their farms. The Pointe Coupee Parish Police Jury will operate and maintain the structural measures. The estimated annual operation and maintenance cost of structural measures is \$65,200.

Average annual benefits of the project include \$532,100 from flood damage reduction, \$107,500 from more intensive land use, \$483,600 from improved drainage, \$26,000 from redevelopment, and \$119,000 from secondary effects.

Total average annual benefits amount to \$1,268,200. Total average annual costs, including amortization of installation cost plus operation and maintenance, are \$243,500. The ratio of benefits to costs is 5.2:1.

#### INTRODUCT ION

This plan was made brief to avoid excessive duplication with information required in the Environmental Impact Statement, Part II. Part II should be reviewed for the environmental setting, watershed problems, favorable and adverse environmental impacts of the project, alternatives considered, and the consultation and review carried out with the appropriate agencies and others.



#### PLANNED MEASURES

#### Land Treatment

The land treatment program will consist of measures necessary to adequately treat 50,200 acres of cropland and pastureland. Based on the characteristics of the soils, major land treatment measures to be installed under this program include conservation cropping systems, crop residue management, bedding, drainage land grading, land smoothing, structures for water control, drainage field ditches, mains and laterals, pasture and hayland management, pasture and hayland planting, and upland wildlife management. This will include 400 acres to be planted for upland wildlife food and cover.

Some 50,900 acres of forest will continue to receive forest management assistance and fire protection from going programs. About 8,150 of these acres will receive forest management assistance heavily wildlife management oriented under the going and accelerated forest management program. This includes about 950 acres of wildlife wetland habitat management to be installed under the going soil and water conservation district program. These areas will be located throughout the project area on individual farms where existing conditions are compatible with this practice.

The land treatment program is planned to be installed over a 10-year period.

#### Structural Measures

Planned structural measures consist of 115 miles of channel work with appurtenant structures for water control (pipe drops) and one grade stabilization structure. The channel work includes 105 miles of excavation, 1 mile of clearing and shaping, and 9 miles of clearing only. Approximately 3 miles of the 105 miles of excavation will be new channel excavation. (See figure 1, showing a typical profile and cross section of a channel.)

All spoil not spread within 90 days will be seeded with temporary vegetation. Otherwise spoil, berms, and channel slopes will be seeded immediately after construction traffic has ceased. Spoil on open land will be spread unless otherwise specified by the Sponsors. Spoil that is not spread will be stacked, shaped, and seeded. Hardwood seedlings will be planted on the spoil in forested areas.

One grade stabilization structure (figure 2) will be installed at the outlet end of Channel L-1B. Structures for water control (pipe drops, figure 3) will be installed at side inlets of project channels. The exact location of these structures will be determined during the construction phase of the project.

Alteration, modification, or reconstruction of 154 bridges and culverts and approximately 60 pipelines at crossings are necessary to insure proper functioning of the planned structural measures. Utility lines and fences at approximately 500 locations will be rebuilt and relocated as necessary to allow construction equipment to operate.

Special construction techniques will be as follows:

- 1. Place spoil on both sides of Channels L-4A and segments of L-4A1 and L-4A-1A with natural drainage ways left open.
- 2. Place spoil on the left descending side of Channel L-3A-1 through the forested area.
- 3. Alternate construction of channel systems M-1 and M-2 so that one is completed before the other is started.
- 4. Excavate that portion of M-1 upstream from L-1B and all its laterals prior to excavating the lower portion of M-1.
- 5. Install grade stabilization structures in Channel L-1B prior to construction of Channel L-1B and Channel M-1 below the confluence of L-1B.
- 6. In channel systems M-1 and M-2 install structures for water control (pipe drops) concurrent with channel work.

The total area of rights-of-way required for project channels is 1,345 acres. The area of existing rights-of-way is 913 acres.

The watershed plan proposes an installation period of 6 years for structural measures.

A project map on page I-13 provides an overview of the planned project showing the location of planned work and the areas benefited.

#### INSTALLATION COSTS-MONETARY

The total installation cost of the project is estimated to be \$7,351,700 of which \$2,075,580 will be borne by Public Law 566 funds and \$5,276,120 by other funds (see table 1). Included in the total project cost is \$4,492,300 for land treatment measures and \$2,859,400 for structural measures.

#### Land Treatment Measures

The installation of land treatment practices will insure the timely realization of project benefits and will provide proper treatment of the land for protection and improvement. This plan provides for installation of these measures within a 10-year project installation period. Installation costs of \$3,953,800 will be borne by individual land users.

This includes \$77,800 to enhance multiple use of cropland and forest land for wildlife habitat. Of this amount, \$40,000 would be applied to upland wildlife habitat improvement and development in association with cropland and \$57,800 for forest land. Forest stand improvement measures will be designed to improve wildlife habitat by improving species composition and condition.

The cost of technical assistance for the going and accelerated program to install land treatment measures is estimated to be \$538,500 during the 10-year installation period. Of this amount, \$434,400 will be provided by Public Law 566 funds for an accelerated program of which \$19,500 will be for forest management and \$414,900 will be for all other planned practices. The remaining \$104,100 will be furnished by other funds, under the going program. Of this amount, \$97,900 will be provided by the Soil Conservation Service to assist the going soil and water conservation district program, and \$6,200 by the U.S. Forest Service in cooperation with the Louisiana Forestry Commission.

#### Structural Measures

The total cost of installation of channel work is \$2,859,400, of which \$1,610,400 is for construction, \$112,800 is for engineering services, \$797,900 is for land rights, and \$338,300 is for project administration. The cost of this work, which includes excavation, clearing and shaping, clearing only, appurtenant grade stabilization structures, structures for water control, and vegetative planting is shown in table 1. The allocation of these costs to purposes is shown in table 2A.

Public Law 566 funds will bear 100 percent of these construction costs allocated to the purpose of flood prevention and 50 percent to the purpose of drainage improvement. The remaining 50 percent of construction costs allocated to drainage will be provided by the Sponsoring Local Organization. This arrangement will result in 75 percent of the construction costs being borne by Public Law 566 funds and 25 percent by the Sponsoring Local Organization.

The costs of measures were estimated using current prices of work of comparable size and complexity and adjusted to local conditions. This was further modified by adding a contingency of 20 percent to provide a reasonable margin to cover unexpected costs.

The construction cost of \$1,610,400 consists of \$1,400,900 for excavation, clearing and shaping, and clearing, \$62,700 for structures for water control (pipe drops), \$144,400 for establishing vegetation and \$2,400 for grade stabilization structures.

The land rights cost consists of \$123,400 for the value of land, surveys, and legal fees; \$15,500 for modification or replacement of State and Federal bridges; \$241,530 for parish and private bridges; \$6,450 for State and Federal culverts; \$65,000 for parish and private culverts; and \$346,020 for alterations, modifications, or reconstruction of existing miscellaneous facilities such as pipelines and utilities. No additional land rights are necessary for the installation of appurtenant structures. They will be installed in the channel rights-of-way.

The cost of all engineering services is the direct costs of work to be done in relation to structural measures. The work consists of surveys, investigations, designs, and preparation of plans and specifications including vegetative requirements. The cost of these services will be paid by Public Law 566 funds.

The Service and the Sponsoring Local Organization will be responsible for the total cost of items of project administration that each incurs. These costs are the administrative costs associated with the installation of structural measures. The Sponsors will bear the costs of administering contracts and making any inspections they believe necessary to assure themselves the work is being done according to their interest. The Service will bear the cost of inspections that are necessary to protect the interest of the Federal Government. Also, the Service will pay the cost for Government representatives and other project administration services it incurs.

Public Law 566 funds will bear approximately \$2,075,580 (about 28 percent) of the total cost and other funds will bear approximately \$5,276,120 (about 72 percent).

Should any relocation costs occur, they would be shared on the basis of 28 percent of Public Law 566 funds and 72 percent of Other funds.

All structural measures are multiple purpose, serving both flood prevention and drainage. The cost of structural measures, excluding project administration, is \$2,521,100 of which 50 percent is allocated to flood prevention and 50 percent is allocated to drainage.

A schedule of obligations for the 10-year installation period, including both land treatment and structural measures, is shown on page I-25.



#### BENEFITS-MONETARY

Total average annual monetary benefits of this project are estimated to be \$1,268,200 (table 6). Benefits from flood damage reduction to crops and pasture are estimated to be \$532,100. This includes a reduction of \$48,400 of indirect losses attributed to flooding.

Benefits to crops and pasture from increased net returns as a result of improved drainage measures contained in the project are estimated to be \$483,600. Benefits from more intensive use of the land as a result of the project will be about \$107,500.

Redevelopment benefits will be approximately \$26,000. These are benefits resulting from the project's utilization of local unemployed and underemployed labor. It represents wages paid to local labor for both the installation and operation and maintenance of the project.

Local secondary benefits representing economic values over and above the monetary effects of the project as a result of activities induced by or stemming from the project are estimated to be \$119,000. Secondary benefits from a national viewpoint will accrue to this project, but were not evaluated. Other benefits will accrue in the watershed, but no attempt was made to attach monetary values to them.

#### COMPARISON OF BENEFITS AND COSTS

Average annual project benefits from structural measures are estimated to be \$1,268,200. The average annual cost of structural measures (amortized installation cost plus operation and maintenance), is estimated to be \$243,500, providing a benefit-cost ratio of 5.2:1. Total average annual benefits, excluding secondary benefits, are estimated to be \$1,149,200, providing a benefit-cost ratio of 4.7:1.

#### INSTALLATION PROVISIONS

This project is to be carried out over a 10-year period for land treatment measures and a 6-year period for structural measures. The Sponsoring Local Organization understands its obligation and has agreed to carry out the work during this period.

Land users will install land treatment measures in accordance with soil and water conservation plans. These plans are developed in cooperation with the Upper Delta Soil and Water Conservation District, and are based on the desires of the land user and the capabilities and limitations of the soil. The land treatment program will be monitored annually during the installation period to determine the amount of land treatment measures installed and the percent of land that has been adequately treated.

The Forest Service, in cooperation with and through the Louisiana Forestry Commission, will provide technical assistance for installing land treatment measures on forest land. Adequate forest fire protection will be continued through the Louisiana Forestry Commission.

The Pointe Coupee Parish Police Jury will assume the local responsibilities in carrying out the planned structural measures. The Jury will be responsible for the local share of the cost of construction; acquiring necessary land rights; obtaining modification to all roads, bridges, culverts, pipelines, fences, utilities, and other existing items which are needed; and advertising, awarding, and administering contracts. This jury has the power of expropriation and has agreed to use these powers as necessary to obtain needed land rights.

The channel work will progress in an upstream direction except Channel M-1 where the construction procedure given in <u>PLANNED</u> MEASURES will be used to reduce construction sediment prior to entering False River. Investigations indicate that where this construction procedure is used, downstream damages will be reduced. The Sponsors have selected the M-1, M-2, and M-3 system as the first priority area to begin construction. Subsequent contracts will be for work on the M-4, M-5 and the remaining systems, in that order. The sequence of installation of these systems will be reevaluated before each contract is prepared to assure compatibility with changed conditions that may have occurred during the period after the plan is completed and before construction is begun.

Care will be exercised to insure the timely modification or reconstruction of bridges, culverts, pipelines, or other existing facilities in order that they will not be a deterrent to the proper functioning of the planned measures.

The Soil Conservation Service will provide engineering services for the structural measures. The Service will also make the detailed surveys, designs, and cost estimates; prepare plans and specifications; make inspections; and prepare certificates of completion. The Sponsoring Local Organization will enter into a project agreement with the Soil Conservation Service before any contracts are awarded for the installation of project measures.

Prior to entering into agreements that obligate funds of the Service, the Pointe Coupee Parish Police Jury will have a financial management system for control, accountability, and disclosure of Public Law 566 funds received, and for control and accountability for property and other assets purchased with Public Law 566 funds. Program income earned during the grant period will be reported on the Sponsor's request for advance or reimbursement from the Service.

#### OPERATION AND MAINTENANCE PROVISIONS

Operation and maintenance of all phases of the completed project will be the responsibility of non-Federal groups, agencies, and individuals.

Individual land users will have the responsibility for maintaining land treatment measures. The Soil Conservation Service, through the soil and water conservation district program, will provide technical assistance to land users for the maintenance of these measures. The Louisiana Forestry Commission, in cooperation with the Forest Service, will provide technical assistance necessary for maintaining land treatment measures under the going Cooperative Forest Management Program. The objective is to maintain adequate drains, vegetative cover, or other conservation practices on the land in order to realize the benefits from the project.

Operation and maintenance of all phases of the completed structural measures will be the responsibility of the Pointe Coupee Parish Police Jury. In addition to the 115 miles of channels to be worked under this plan, the Jury will continue to maintain the system of channels that is now adequate. The methodical operation and maintenance of these channels and related structures will insure proper functioning of these measures and realization of benefits. The estimated annual maintenance cost of structural measures is \$65,200.

The present maintenance tax for drainage is considered adequate for maintaining channels and appurtenant structures. Should these funds prove inadequate, the Sponsors have agreed to provide additional financing by an increase in revenue through normal taxing procedure.

Channel maintenance includes periodic cleanouts necessary to restore channels to their planned capacities, repair of bank erosion, control of vegetation, and repair or replacement of appurtenant structures. Maintenance of structures for water control and grade stabilization structures include repairing rills around headwalls or wingwalls, replacing rock riprap as needed, maintaining or replacing vegetation on fills, repairing or replacing worn or broken parts, replacing short-life parts, and all other activities essential to the functioning of the structure.

Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used for maintenance equipment to reach the channels. Sufficient access will be available to properly maintain all channels. The channels will be kept clear

of excessive vegetation by mowing, hand labor, and use of approved herbicides. These herbicides will be used in areas where mowing and hand labor are not practical. Spraying will be accomplished in the summer months when the ephemeral channels and the intermittent channels are most likely to have the least flow. Eroded banks, side inlets, and other appurtenances will be repaired when in need. Localized sediment accumulations in channels will be removed periodically by mechanical means.

Vegetation remaining on channel banks not disturbed during construction will be maintained. Trees left within channel rights-of-way for aesthetic value or shade, will not be destroyed by maintenance methods. Approximately two complete mechanical cleanouts are anticipated during the life of the project and the volume of material to be removed each time will require no additional rights-of-way.

Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the Sponsors to have free access to all portions of the project measures at any reasonable time for the purpose of inspection, repair, and maintenance.

The Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, and after the occurrence of any unusual event that might adversely affect the structural measures. These joint inspections will continue for 3 years following installation of the structural measures. Inspection after the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection will include, but will not be limited to, (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) brush control in channels, (4) structures for water control (pipe drops), and (5) general conditions.

The Sponsoring Local Organization fully understands its obligation for operation and maintenance and will execute a specific operation and maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of project measures.

The operation and maintenance agreement will include specific provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance.

The method in which operation and maintenance is to be accomplished will be in accordance with procedures outlined in the Soil Conservation Service Operation and Maintenance Handbook for Louisiana.



## FINANCING PROJECT

Federal assistance will be provided under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress; Stat. 666) as amended. This assistance is subject to appropriation of funds.

The cost of applying land treatment measures will be borne by the land users. Technical assistance to land users will be provided by the Soil Conservation Service and the U.S. Forest Service cooperating with the Louisiana Forestry Commission under going programs. Funds for the acceleration of technical assistance necessary to insure timely installation of land treatment measures and for soil surveys will be provided by Public Law 566.

The Louisiana Department of Public Works has agreed to provide funds for the local share of cost of structural measures contingent on the appropriation of monies for this purpose by the Louisiana Legislature. The Sponsors recognize that these funds may not be available or that additional funds may be required. They will be responsible for obtaining additional financing as necessary through normal funding procedures such as taxes or bond issues.

The project Sponsors responsible for managing the finances of work in which the Soil Conservation Service has financial interest will develop and maintain a financial management system. This system will contain provisions for maintaining accurate, current, and complete disclosure of financial transactions, budgetary actions, and provisions for audits. The system will be developed in accordance with and contain provisions set forth by Soil Conservation Service policy.

# SCHEDULE OF OBLIGATIONS Bayou Grosse Tete Watershed (Dollars) $^{\underline{a}'}$

Year	Measures	PL-566 Funds	Other Funds	Total Funds
let	Construction			
lst	Engineering Services	45,900		45 <b>,9</b> 0
	Land Rights		308,300	308,30
	Project Administration	16,000		16,00
	Land Treatment		268,100	268,10
	Soil Surveys	12,600	1,300	13,90
	Technical Assistance	26,100	10,000	36,10
2nd	Construction	490,500	163,500	654,00
2114	Engineering Services	28,500		28 <b>,5</b> 0
	Land Rights		139,200	139,20
	Project Administration	75,110	4,690	79,80
	Land Treatment		363,800	363,80
	Soil Surveys	12,600	1,000	13,60
	Technical Assistance	33,600	10,000	43,60
3rd	Construction	306,000	102,000	408,00
	Engineering Services	17,400		17,40
	Land Rights		113,200	113,20
	Project Administration	95,710	5,390	101,10
	Land Treatment		356,400	356,40
	Soil Surveys	12,600	1,000	13,60
	Technical Assistance	31,900	9,900	41,80
4th	Construction	186,300	62,100	248,40
4011	Engineering Services	21,000		21,00
	Land Rights		237,200	237,20
	Project Administration	62,860	3,380	66,24
	Land Treatment		381,100	381,10
	Soil Surveys	12,600	1,000	13,60
	Technical Assistance	36,200	9,900	46,10
5th	Construction	225,000	75,000	300,00
Jen.	Engineering Services			
	Land Rights			
	Project Administration	48,500	3,160	51,66
	Land Treatment		393,800	393,80
	Soil Surveys	12,600	1,000	13,60
	Technical Assistance	38,000	9,900	47,90
6th	Construction			
	Engineering Services			
	Land Rights	<del></del>		
	Project Administration	22,400	1,100	23,50
	Land Treatment		403,100	403,10
	Soil Surveys Technical Assistance	38,900	9,900	48,80
	Technical Assistance	30,700	9,900	40,00
7th	Construction			
	Engineering Services			
	Land Rights			
	Project Administration Land Treatment		417,600	417,60
	Soil Surveys			
	Technical Assistance	40,900	9,800	50,70
8th	Project Administration			
	Land Treatment		437,400	437,40
	Soil Surveys			
	Technical Assistance	43,800	9,800	53,60
9th	Project Administration			
	Land Treatment		441,000	441,00
	Soil Surveys		0.000	
	Technical Assistance	44,500	9,800	54,30
10th	Project Administration			<b></b> -
	Land Treatment		491,500	491,50
	Soil Surveys	·		
	Technical Assistance	37,500	9,800	47,30
			**************************************	
	Total	2,075,580		7,351,70

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST

#### Bayou Grosse Tete Watershed, Louisiana

	: -	: Number		Estima	ted Cos	t (Dollars)1/			:
:		: Non-Federa	1 : P	. L. 566 Fur		:	Other		:
Installation Cost Item :	Unit	: Land	: scs3/:		Total	: scs3/:	FS3/	: Total	: TOTAL
LAND TREATMENT									
Land Areas2/	Acres								
Cropland	to be	30,400				1,537,300		1,537,300	1,537,300
Pastureland	treated	19,800				2,353,700		2,353,700	2,353,700
Forestland		8,150				3,800	54,000	57,800	57,800
Individual Practices									
Fire Control		50,900					5,000	5,000	5,000
Technical Assistance			414,900	19,500 43	34,400	97,900	6,200	104,100	538,500
TOTAL LAND TREATMENT			414,900	19,500 43	34,400	3,992,700	65,200	4,057,900	4,492,300
STRUCTURAL MEASURES									
Construction Work									
Channel Work4/									
N	Miles	1	16,200		16,200	5,400		5,400	21,600
M	Miles	111	1,159,200	1,15	9,200	386,400		386,400	1,545,600
0	Miles	3	32,400		32,400	10,800		10,800	43,200
Subtotal-Construction	n		1,207,800		7,800	402,600		402,600	1,610,400
Engineering Services			112,800	1,1	12,800				112,800
Relocation Payments									
Project Administration									
Construction Inspection			161,100		51,100				161,100
Other			159,480	15	9,480	17,720		17,720	177,200
Relocation Assistance									
Advisory Services									
Subtotal-Administration	1		320,580	32	20,580	17,720		17,720	338,300
Other Costs									
Land Rights						797,900		797,900	797,900
Subtotal-Other						797,900		797,900	797,900
MOTHER CONTRACTOR			1 (/1 100	1 (1	1 100	1 010 000		1 010 000	0.050.400
TOTAL STRUCTURAL MEASURES			1,641,180	1,64	1,180	1,218,220		1,218,220	2,859,400
TOTAL PROJECT			2,056,080	19,500 2,07	75.580	5,210,920	65,200	5,276,120	7.351.700
101112 1110201			2,050,000	17,500 2,07	5,550	3,213,720	05,200	3,2,3,120	,,552,,00

<sup>1/</sup> Price base 1975.

Includes only areas estimated to be adequately treated during the project installation period. Treatment will be accelerated throughout the watershed, and dollar amounts apply to total land area not just adequately treated areas.

 $<sup>\</sup>underline{3}/$  Federal agency responsible for assisting in installation of works of improvement.

Type of channel before the project: (N) - an unmodified, well-defined natural channel or stream; (M) - manmade ditch or previously modified channel; (O) - none or practically no defined channel.



TABLE 1A - STATUS OF WATERSHED WORKS OF IMPROVEMENT

Grosse Tete Watershed, Louisiana

		Applied	Total Cost
Measures	Units	To Date	(Dollars)1/
Land Treatment			
D. Jdin.	A = 22 = =	226	10 170
Bedding	Acres		10,170
Conservation Cropping System	Acres	5,481	38,370
Crop Residue Management	Acres	4,362	10,890
Drainage Mains and Laterals	Feet	316,998	110,950
Drainage Land Grading	Acres	10,108	1,010,800
Land Smoothing	Acres	66	2,640
Pasture and Hayland Management	Acres	2,550	76,500
Pasture and Hayland Planting	Acres	2,550	204,000
Structures for Water Control	Number	53	7,950
Drainage Field Ditches	Feet	81,058	9,730
Wildlife Upland Habitat Mgt.2/	Acres	7,491	· <u>-</u>
Timber Stand Improvement3/	Acres	200	4,000
Forest Wildlife Habitat Mgt.3/	Acres	12,000	120,000
Forest Fire Control3/	Acres	45,800	82,900
101000 1110 00111012/	ner es	13,000	02,700
	·	·	
Total			1,689,000
10641			1,007,000

<sup>&</sup>lt;u>1</u>/ Price Base 1975.

 $<sup>\</sup>underline{2}$ / Preservation only

 $<sup>\</sup>underline{3}/$  Technical assistance provided by the U.S. Forest Service



TABLE 2 - ESTIMATED STRUCTURAL COST DISTRIBUTION

Bayou Grosse Tete Watershed, Louisiana (Dollars) $\underline{1}/$ 

	: Installati	tion Cost - P.L.	566 Funds	Installat	Installation Cost - Other Funds	Funds :	Total
			Total Public:			Total	Installation4/
Item	: Construction	: Engineering :	Law 566 :	Construcion	Construcion : Land Rights :	Other:	Cost
CHANNEL WORK2/							
Evaluation Unit I							
Z	16,200	1,500	17,700	2,400	23,800	29,200	76,900
E	441,900	41,300	483,200	147,300	266,900	414,200	897,400
0	32,400	3,100	35,500	10,800	17,600	28,400	63,900
Subtotal	490,500	45,900	536,400	163,500	308,300	471,800	1,008,200
Evaluation Unit II							
×	306,000	28,500	334,500	102,000	139,200	241,200	575,700
Subtotal	306,000	28,500	334,500	102,000	139,200	241,200	575,700
Evaluation Unit III							
×	186,300	17,400	203,700	62,100	113,200	175,300	379,000
Subtotal	186,300	17,400	203,700	62,100	113,200	175,300	379,000
Evaluation Unit IV							
×	225,000	21,000	246,000	75,000	237,200	312,200	558,200
Subtota1	225,000	21,000	246,000	75,000	237,200	312,200	558,200
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 207 000	000	1 220 600	000	000	1 200 000	0 501 100
IOIAL	1,207,000	112,800	1,320,600	407,000	197,900	1,200,300	7,721,100
Project Administration			320,580			17,720	338,300
GRAND TOTAL	1,207,800	112,800	1,641,180	402,600	3/797,900	1,218,220	2,859,400

1/ Price base 1975.

Type of channel before the project: (N) - an unmodified, well-defined natural channel or stream; (M) - manmade ditch or previously modified channel; (O) - None or practically no defined channel. 72

Includes \$123,400 for value of land, legal fees, and surveys; \$328,480 for replacement or modification of bridges and culverts; and \$346,020 for modification of pipelines, utility lines, and miscellaneous facilities. 3/

The cost of this work includes channel work (excavation and clearing), appurtenant grade stabilization structures, structures for water control and vegetative plantings. 4



TABLE 2A - COST ALLOCATION AND COST SHARING SUMMARY Bayou Grosse Tete Watershed, Louisiana (Dollars) $\frac{1}{2}$ /

: Public Law 566 : Contact of Prevention is Drainage is Total is Prevention is Drainage is Draina		Cost	Cost Allocation				Cos	Cost Sharing		
Flood : Frevention : Drainage : Total : Flood : Drainage : Drainage : Flood : Drainage : Dra			Purpose		: Pub	lic Law 566			Other	
Item : Prevention : Drainage : Total : Prevention : Drainage : Drainage : Total : Prevention : Drainage : Total : Prevention : Drainage : Drainage : Total : Drainage : Drainag		: Flood			: Flood :	••		: Flood	••	
PLE PURPOSE nnel Work h Appurtenent uctures 1,260,550 1,260,550 2,521,100 861,600 459,000 1,320,600 398,950 1,260,550 1,260,550 2,521,100 861,600 459,000 1,320,600 398,950	Item	: Prevention	: Drainage :	Total	: Prevention :	Drainage:	Total	: Prevention	: Drainage:	Total
1,260,550 1,260,550 2,521,100 861,600 459,000 1,320,600 398,950	MULTIPLE PURPOSE Channel Work with Appurtenent Structures	1,260,550	1,260,550	2,521,100		429,000	1,320,600	398,950	801,550	801,550 1,200,500
	TOTAL	1,260,550	1,260,550	2,521,100		459,000	1,320,600	398,950	801,550	801,550 1,200,500

1/ Price hase 1975.

December 1975



#### TABLE 3 - STRUCTURE DATA

#### CHANNELS

Bayou Grosse Tete Watershed, Louisiana

	: :		:		: :		:			. :				:		: ;	Invento	ory <u>1</u> ,
Channel	:Station:	age :	:		:Surr-:	Grad.	: Bot	tom	: LIOW :	Side :	Aged:	AS :	Agea :	AS :	tion	:Tvpe	:Tvbe	:Flow
		Area	Req'd:	Des.	Flev.	ft/ft	:Width	:Grade :	:Depth:	Slope		Built	fna	Built:		: OI :Work	:Chan.	:Cond.
M-1	272+03		15			0.00035		0.08								II	.P10]. M	:P10).
M-1	221+86 86+00	1.77	83	90		0.00035	9.0	0.08	4.2	1.5:1	0.043 0.035 0.034	0.025	1.40	2.49		ΙI	M M	E E
		19.10	519 760	529 845	18.4	0.00010	33.0	0.05	7.6	1.5:1	0.030	0.023		2.37		II	M M	S
	0+00		868	884	18.0	0.00010	44.0	0.01		1.5:1	0.028	0.023			210430			Ī
L-1B	196+00 160+00	0.39	23 46		25.1 24.0	0.00025				1.5:1		0.025	0.77	1.73 1.99		III	M M	E E
	145+00 74+10	1.23	61 85	63 90	23.6	0.00025		0.05		1.5:1		0.025	1.09	2.02		II	M M	E E
	0+00	9.49	324	<b>3</b> 36	20.0	0.00025	19.0	0.05		1.5:1		0.023	1.87	3.17	43680	II	М	s
L-1B-1	75+10 42+75	1.77 1.90	87 82	91	23.8 22.9	0.00020	A=	96.00	P= 33 P= 33	.00	0.045	0.045 0.045		0.95		IV	M M	E E
	0+00	6.44	237		22.0	0.00020		0.03		1.5:1		0.023	1.57		15190		M	E
L-1B-1A	85+00 30+39	0.18	13 46	21 46	32.6	0.00050	7.0	0.07	3.1	1.5:1	0.041	0.025	1.28		11270	II	M M	E E
	15+91 0+00	1.89 2.52	99 112	99 133	28.8	0.00050		0.11 95.00	P = 31	1.5:1	0.039		1.61	1.40	11370	VI	M M	E E
L-18-1A-1	50+71 0+00	0.15 0.97	11 53	13 55	33.2 29.7	0.00010		0.05		1.5:1		0.025 0.025		1.05 1.37	6150	II	M M	E E
L-1B-1B	61+00	0.24	17	23	33.5	0.00100		0.11			0.044		1.32		0200	II	М	E
	21+00 0+00	0.78	4.4 50	45 120	29.5	0.00100	7.0	0.11		1.5:1		0.025	1.61	3.37	3140		M M	E E
L-1B-1B-1	9+40	0.08	6	10	32.2	0.00010	5.0			1.5:1			0.47	1.00		II	М	E
	0+00		14			0.00010		0.06			0.042			1.08	1240		М	Е
L-1C (lower)	277+91 270+00	-0.75	38 38	39 39	26.9	0.00030	10.0	0.03	2.8	1.5:1	0.041	0.025	0.99	2.03		II	M M	E E
	196+76 67+26	3.93	93 133	97 139	24.6	0.00030	11.0	0.05	4.8	1.5:1	0.038	0.025		2.55	35530	II	M M	E E
L-1C-1	0+00 12+45	5.84 1.02	182	183	18.7	0.00030	13.0	0.04		1.5:1	0.060	0.025		2.67	35520	VI	M M	S E
L-IC-I	0+00	1.22	40	113		0.00130			P= 24		0.060			1.74	•	νī	М	Ē
L-1C-1A	91+00 30+00	0.11	8 18	34 34	33.7 27.0	0.00110	5.0	0.11		1.5:1	0.043	0.025 0.025		3.30 3.30	8 <b>7</b> 70	I	0	E E
L-1C-2	21+42 0+00	0.32 0.69	21 37	23 38	29.5 27.2	0.00100 0.00100	5.0 5.0	0.13 0.13		1.5:1			1.32 1.55		520	II	M M	E E
L-1C (upper)	300+00 396+00 430+00	0.35 1.78 3.02	19 69 98	26 74 102	21.7 24.7 23.8	0.00025 0.00025 0.00025	9.0 10.0 13.0	0.04 0.04 0.03	4.0	1.5:1 1.5:1 1.5:1	0.042 0.039 0.038	0.025 0.025 0.025		1.73	35190	II	M M M	E E E
L-1C-3	45+00 0+00	0.10	8 29	25	28.6	0.00060	5.0	0.06	2.5	1.5:1	0.043	0.025	1.14	2.44	3500	II	м м	E E
M-2	215+00	0.73	49			0.00050	8.0	0.06		1.5:1	0.042		1.21		3500	11	M.	E
	185+00 146+00	2.04	64 122	66 125	27.9 25.7	0.00050	8.0	0.06	3.5	1.5:1	0.040	0.025		2.70		II		E E
	101+44	6.78	228 393	223 393		0.00050	18.0	0.06	4.5	1.5:1	0.036	0.025	2.01	3.45		II	M	E E
	44+47	12.28 13.85	389	3486	22.9	0.00010	N-26	23 00	D- 211	0.0	0.060	0.060	1.33	1.33	88660	VI	M N N	s s
						0.00010	A=14	66.00	P= 176	.00	0.060	0.060	1.02	1.02		VI	N	
L-2A	82+00 15+00	1.95	94 94	102	18.6	0.00045	9.0	0.05	4.2	1.5:1	0.038	0.025	1.59	2.82	17550		M M	E E
L-2B	0+00 106+71	0.15	103	486		0.00045		0.12	P= 54		0.060	0.060	1.48			VI VI	M M	S E
D- 25	86+72 0+00	0.82	46 71	53		0.00100	7.0	0.12	2.8	1.5:1			1.69		15800	II	M M	E E
L-2C	56+00	0.10	31			0.00040		0.05			0.041				25000	11	м	E
	0+00	1.02	44	44		0.00040		0.05			0.040				9500	II	М	E
L-2D	75+50 17+15	0.35	22 37		25.4		6.0	0.04	3.5	1.5:1	0.041	0.025	0.95			II	M M	E E
L-2E	0+00 30+00	3.89 2.13	161 98			0.00025		0.14			0.035				7230	11	M M	E E
J 21	0+00	2.26	101	99 104		0.00010		0.01			0.036				18670		M	Ē
M-3	197+84 0+00	15.55 15.55	520 520		18.0 15.2	0.00014 0.00014			P= 64 P= 64		0.030	0.030		1.70 1.70		IV IV	M M	I
L-3A	60+10 24+00	0.77 1.18	46 51	41 53		0.00030		0.04		1.5:1		0.025 0.025	1.05 1.15		1050	II	M M	E E
	0+00	3.60		255	20.0	0.00030	A= 2	08.20	P= 43	3.00	0.060	0.060	1.23	1.23		VI	М	E
L-3A-1	96+00 0+00	0.04 2.04	4 52		25.3 21.5	0.00040		0.05			0.043				21040	I	0	E E

 $<sup>\</sup>underline{1}/$  See "Coding System for Inventory of Channel Work" attached.



																		T	
Channel	: :	: :Drain-:	: Capaci	ity :	Water:	Hydr.	: Chan	nel D	imens	ions	:	"n" V	alue :	: Veloci	ities	: :Excava-	: : of	Chan.	ory Work <u>l</u> /
	:Station	age :	Regidet	Des.	Surf-:	Grad.	: Botto	om Grade	:Flow	: Side	e : A	ged :	As :	Aged	As Built	tion	Type	:Type	:Flow
	:	: Alea :	: :	:	: :	ft/ft	:	a acce	: Depti	:	:	:	Bulle			:	:Wor	Befor	e:Before
	:	sq mi :	cfs:	cfs :	<u> </u>	ft/ft	:	*	: ft	:	<u></u>	:		fps:	: fps	cu yd	:	:Proj.	:Proj.
L-3A-2	13+00 0+00	0.21	15 19	20 20		0.00040		0.04					0.025 0.025			930	II	M M	E E
L-3B	58+50 30+30 0+00	1.51		65	23.3	0.00040 0.00040 0.00040	Λ= 5	4.00	P= 2	22.00	0	0.060 0.050 0.060	0.060 0.050 0.060	1.08			IV VI	M M	E E E
M-4	310+00 203+50	5.02	192 271 373 573 745	661 437 693 784 1331	23.8 22.2 21.2 17.6 16.0	0.00025 0.00025 0.00025 0.00025 0.00015 0.00015	A= 328 A= 273 A= 333 A= 429 A= 579	3.00 2.00 3.00 9.00	P= ! P= ! P= ! P= !	59.00 56.00 51.00 55.00	0 0 0 0	0.035 0.040 0.035 0.035	0.045 0.035 0.040 0.035 0.035 0.030	2.02 1.61 2.08 1.83 2.32	2.02 1.61 2.08 1.83		VI VI VI VI VI VI	M M M M M M	E E I I S S
L-4A	203+50 70+00 0+00	31.48 37.08 47.95	903 858 1023		16.8		34.0	0.01	9.	7 1.5: 7 1.5: 74.00	:1 0		0.023 0.023 0.040	1.94 1.94 2.34	2.66 2.66 2.34	64140	II VI	M M M	E E S
L-4A-1	328+00 319+00 292+50 255+00 71+75 66+00 0+00	0.31 0.37 0.49 0.72 3.30 8.44 16.35	20 24 30 41 135 317 428	29 41 139	26.7 25.4 19.0	0.00100	4.0 A= 25 7.0 11.0 24.0	0.10 5.00 0.04 0.04	2.5 P= 3.2 4.8	1.5: 3 1.5: 3 1.5:	:1 0 :1 0 :1 0 :1 0	.043 .050	0.025 0.025 0.050 0.025 0.025 0.023	1.42 1.17 1.09 1.59	1.17	78850	II VI II II II	M M M M M M	E E E E E
L-4A-1A	190+00 160+00 101+50 15+00 0+00	0.20 0.70 1.90 4.87 4.87	14 40 64 148 148	42 64 151	23.7 21.2	0.00060 0.00060 0.00030 0.00030	5.0 8.0 12.0	0.04	3.2 3.9 5.0		:1 0 :1 0 :1 0		0.025 0.025 0.025 0.025 0.060	1.19 1.55	2.72 2.20 2.59	24670	II II VI	м м м н	E E E E
L-4A-1A-1	83+0 <b>0</b> 0+00	1.21	ES	TIMAT	'ED 2/											10000	II	M M	E E
L-4A-1B	160+00 120+00 0+00	0.90 1.34 5.14	50 65 182	65	25.6	0.00055 0.00055 0.00055	8.0	0.06	3.4	1.5:	:1 0	.040	0.025 0.025 0.040	1.47	2.81	2320	II IV	M M M	E E E
L-4A-1B-1	28+00 0+00	1.18	ES	TIMAT	ED2/											4400	II II	M M	E E
L-4A-2	125+00 0+00	0.79	ES	TIMAT	ED2/											9800	II	M M	E . E
L-4A-3	105+00 0+00	1.18	ES	TIMAT	ED2/											11300	II	M M	E E
L-4B	191+50 141+63 24+50 0+00	0.46 1.25 3.73 5.86	22 60 139 178	57 146	26.5 18.6	0.00010 0.00010 0.00065 0.00065	10.0 10.0	0.04	4.4	1.5:	:1 0 :1 0	.038	0.025 0.025 0.025 0.055	0.78	1.39 3.55	24900	II II VI	м м м м	E E E
L-4B-1	130+00 0+00	2.04	ES	TIMAT	ED2/											17000	II	M M	E E
L-4C	95+00 0+00	0.95	ES	TIMAT	ED2/											9300	II	M M	E E
L-4E	38+00 0+00	1.51	ES	TIMAT	ED2/											6700	II	M M	E E
L-4E-1	11+00 0+00	0.51	ES	TIMAT	ED2/											1000	II	M M	B. E
L-4F	82+00 0+00	0.45	ES	TIMAT	ED2/											5000	II	M M	E E
L-4G	50+00 0+00	0.30	ES	TIMAT	ED2/											2300	II	M M	E E
L-4G-1	14+00 0+00	0.07	ES	STIMAT	ED2/											500	II	M M	E E
L-4H	96+00 58+50 47+50 39+60 0+00	0.07 0.50 0.72 0.89 1.83	6 30 41 49 89	32 41 50	28.0 27.6 27.3	0.00040 0.00040 0.00040 0.00040 0.00040	6.0 6.0 6.0	0.05 0.08 0.08	2.9 3.3 3.6	1.5: 1.5: 1.5:	:1 0 :1 0 :1 0	.042	0.025 0.025 0.025 0.025 0.050	1.06 1.13 1.22	2.19 2.27 2.38	10750	II II III VI	м м м м	E E E E
L-4I	39+00 0+00	0.54	ES	TIMAT	eD2/											<b>300</b> 0	II	M M	E E

 $<sup>\</sup>underline{1}/$  See "Coding System for Inventory of Channel Work" attached.

<sup>2/</sup> Quantities for these channels were estimated based upon visual observation and comparison to surveyed channels with similar characteristics.



Channol	: :Station:	Drain-	: Capac:	ity :	Water:	Hydr.	Chan	nel Di	mensio	ns :	n" l	/alue :	Veloci	ties:	Excava-	of (	Chan.	Work!
Channel	: :	Area	: Keq a:	pes. :	r.iev.:		widen:	Grade	Depth:	STobe:		Bullt		Bulle		:Work	Befor	:Cond. e:Before
	<u>: :</u>	sq mi	cfs:	cfs:	:	ft/ft :	ft:	ક :	ft:	:	<u> </u>	·:	fps:	fps:	cu yd	: :	Proj.	:Proj.
M-5	655+00 460+00 0+00	0.33 4.03 13.88	13 125 368	130	20.1	0.00040 0.00040 0.00010	11.0	0.05 0.05 0.02	4.5	1.5:1	0.037	0.025 0.025 0.023	1.62	2.85	240800	II II	M M M	E E E
M-6	85+00 0+00	1.38	ES	TAMITE	<sub>ED</sub> 2/										11000	II	M M	E E
M-7	90+00 0+00	0.58	ES	TAMITE	2/ED2/										6200	II	M M	E E
M-8	95+00 0+00	0.56	ES	TAMITE	ED2/										6300	II	M M	E E
<b>M−</b> 9	152+00 103+60 18+00 8+00 0+00	2.24 3.79 5.52 7.19 7.35	97 151 207 256 3	151 239 258		0.00030 0.00030 0.00030 0.00030 0.00030	12.0 A= 15 13.0	0.05 1.00 0.03	$P = \begin{bmatrix} 5.0 \\ 39 \\ 6.2 \end{bmatrix}$	1.5:1 .00 1.5:1	0.036 0.040 0.034		1.55	2.62 1.59 3.21	5640	II IV II VI	м м м м м	E E E E
L-9A	60+00 0+00	0.69	ES	TAMITE	CED <sup>2</sup> /										5200	II	M M	E E
L-9B	48+00 0+00	0.72	ES	TAMITE	ED2/										4700	II	M M	E E
M-10	115+00 0+00	1.08	ES	TAMITE	ED2/										11300	II	M M	E E
L-10A	25+00 0+00	0.45	ES	TAMITE	ED <sup>2</sup> /										1700	II	M M	E E
M-11	100+00 0+00	0.58	ES	STIMAT	ED <sup>2</sup> /										6800	II	M M	E E
M-12	218+00 200+00 196+00 50+00 0+00	2.16 2.61 2.71 6.24 6.24	93 102 104 213 213		23.5	0.00020 0.00020 0.00020 0.00020 0.00020	A=250 11.0 14.0	0.00 0.03 0.03	P=1000 4.8	.00 1.5:1 1.5:1	0.100 0.100 0.037 0.034 0.060	0.100 0.100 0.025 0.023 0.060	0.39 0.39 1.21 1.53 0.99	0.39 0.39 2.05 2.64 0.99	30240	VI VI VI VI	м м м м м	E E E E
L-12A	82+60 0+00	1.08 1.29	52 58	53 60		0.00020 0.00020					0.040 0.039	0.025 0.025		1.80 1.84	7130	II	M M	E E
L-12B	95+00 15+00 0+00	1.57	E	STIMAT	ED 2/										12700	II VI	M M M	E E E
L-12B-1	22+00 0+00	0.45	ES	STIMAT	e <sub>ED</sub> 2/										1500	II	M M	E E
M-13	165+00 0+00	1.22	ES	TAMITE	ED 2/										15000	II	M M	E E
M-14	35+00 0+00	0.57	ES	TAMITE	ED 2/										2900	II	M M	E E
M-15	25+00 0+00	0.26	ES	TAMITE	ED 2/										1200	II	M M	E E
M-16	23+00 0+00	0.21	ES	TIMAT	ED 2/										1800	II	M M	E E
L-16A	10+00 0+00	0.30	ES	TAMITS	ED 2/										500	II	M M	E E
M-17	64+00 0+00	0.71	ES	TAMITE	e <sub>ED</sub> 2/										5600	II	M M	E E
L-17A	12+00 0+00	0.32	ES	TAMITE	2/										700	II	M M	E E
M-18	60+00 0+00	0.55	ES	TAMITE	ED 2/										4500	II	M M	E E

<sup>1/</sup> See "Coding System for Investory of Channel Ware" attached.

<sup>2/</sup> Quantities for these channels were estimated pases upon visual observation and comparison to surveyed channels with similar characteristics.



#### Soil Conservation Service

# Coding System for Inventory of Channel Work

### Type of Work

- I establishment of new channel including necessary stabilization measures
- II enlargement or realignment of existing channel or stream
- III cleaning out natural or manmade channel
   (includes bar removal and major clearing
   and snagging operation)
  - IV clearing and removal of loose debris within channel section
  - V stabilization as primary purpose (by continuous treatment or localized problem areas). (Present capacity adequate)

#### VI - adequate

# Type of Channel Prior to Project

- N an unmodified, well-defined natural channel or stream
- M manmade ditch or previously modified channel
- 0 none or practically no defined channel

## Flow Condition Prior to Project

- Pr perennial flows at all times except during
   extreme drought
  - I intermittent continuous flow through some seasons of the year but little or no flow through other seasons
  - E ephemeral flows only during periods of surface runoff
- S ponded water with no noticeable flow, caused by lack of outlet or high ground water level.



TABLE 4 - ANNUAL COST

BAYOU GROSSE TETE WATERSHED, LOUISIANA

(Dollars)1/

Evaluation Unit	Amortization of Installation Cost 2/	Operation and Maintenance Cost	Total
I	62,900	20,100	83,000
II	35,900	18,400	54,300
III	23,600	11,700	35,300
IV	34,800	15,000	49,800
Project Administration	21,100	xxxx	21,000
GRAND TOTAL	178,300	65,20C	243,500

<sup>&</sup>lt;u>1</u>/ Price Base - 1975

<sup>&</sup>lt;u>2</u>/ Fifty years @ 5 7/8 percent



# TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS Bayou Grosse Tete Watershed, Louisiana

(Dollars)<u>1</u>/

	: Estimat	ed Average	•	
		l Damage	:	Damage
	: Without	: With	:	Reduction
Item	: Project	: Project	:	Benefits
Floodwater				
Crop and Pasture	659,600	175,900		483,700
Indirect	66,000	17,600		48,400
TOTAL	725,600	193,500		532,100

<u>1</u>/ Price Base - 1975



TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Bayou Grosse Tete Watershed, Louisiana

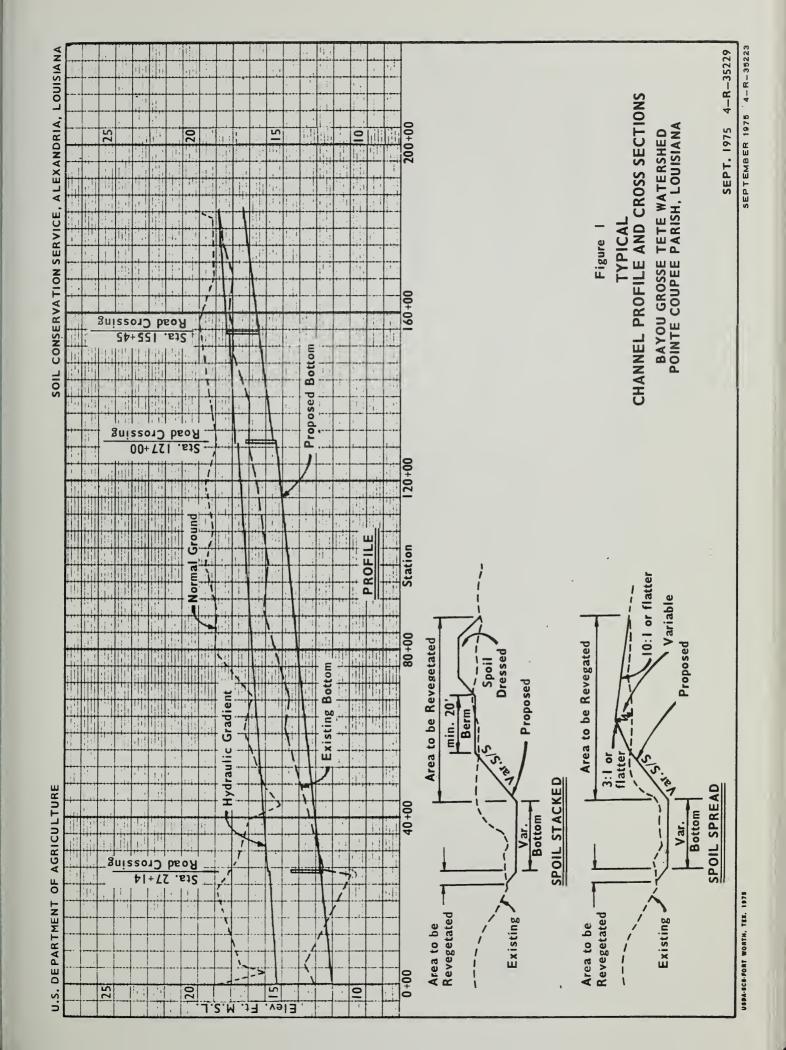
(Dollars)

	•	Average	Average Annual Benefits1/	$^{1}$	••	••		
	: Damage	: More Intensive :	••		••	••	Average , ,	: Benefit
Evaluation Unit	: Reduction	: Land Use :	Drainage	Drainage : Redevelopment : Secondary : Total : Annual Cost2/	Secondary:	Total: 1	Annual Cost2/	: Cost Ratio
Ι	235,200	47,500	213,800	10,000	57,900	564,400	83,000	6.8:1
II	169,600	34,300	154,200	6,700	32,300	397,100	54,300	7.3:1
III	71,900	14,500	65,300	4,200	13,000	168,900	35,300	4.8:1
ΛI	55,400	11,200	50,300	5,100	15,800	137,800	49,800	2.8:1
Project Administration	XXX	xxx	xxx	xxx	XXX	XXX	21,100	xxx
GRAND TOTAL	532,100	107,500	483,600	26,000	119,000 1,268,200	,268,200	243,500	5.2:1

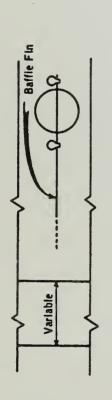
 $\frac{1}{2}$  From Table 4

December 1975

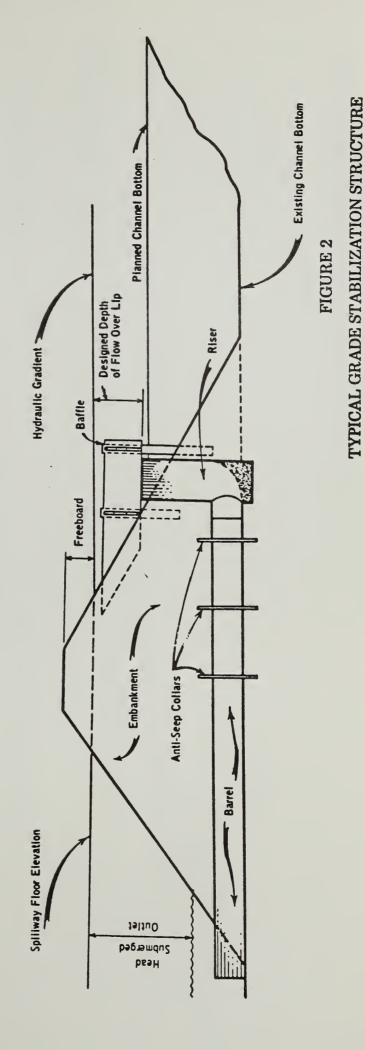








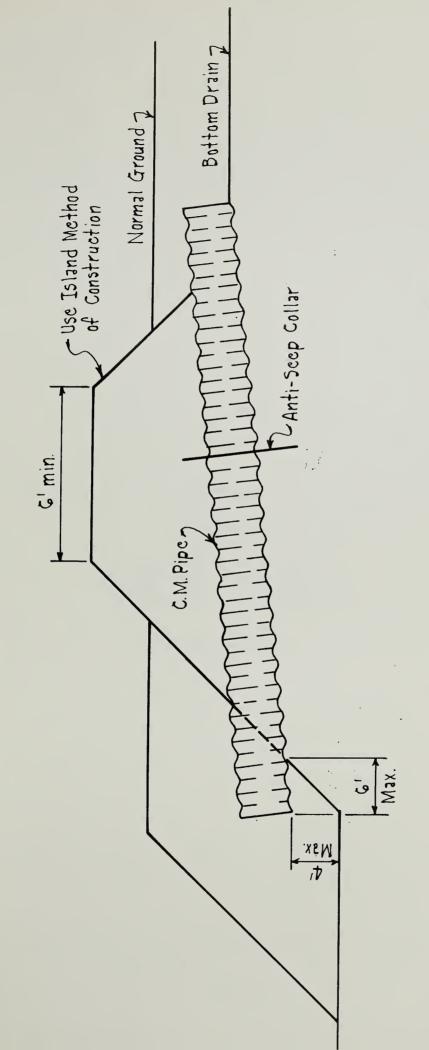
PLAN VIEW OF BAFFLE AND RISER



SECTION VIEW

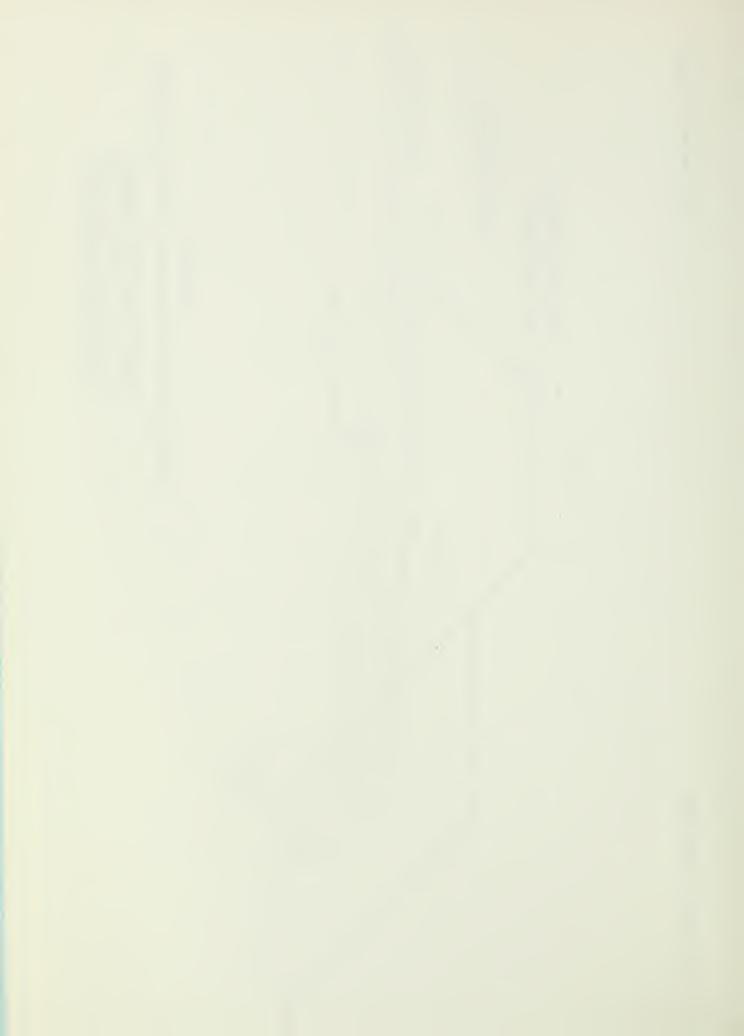
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE BAYOU GROSSE TETE WATERSHED POINTE COUPEE PARISH, LOUISIANA





TYPICAL STRUCTURE FOR WATER CONTROL (PIPE DROP)

BAYOU GROSSE TETE WATERSHED
POINTE COUPEE PARISH, LOUISIANA
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



# BAYOU GROSSE TETE WATERSHED

LOUISIANA

## ADDENDUM

WATERSHED PLAN

Phase-In of Principles and Standards for Planning Water and Related Land Resources

February 1976

#### INTRODUCTION

This addendum is based on the Water Resource Council's "Principles and Standards for Planning Water and Related Land Resources," which became effective October 30, 1973. It is prepared to be consistent with the requirements of the Water Resource Council's Procedure No. 1 for the phase-in of the Principles and Standards. The information presented is:

#### Part I - Benefits to Cost Comparison

An evaluation of the selected plan without reformulation, using current normalized prices, current construction costs, and the current interest rate.

#### Part II - Four Account Displays

Evaluated effects of the selected plan are displayed under separate accounts for (1) National Economic Development, (2) Environmental Quality, (3) Regional Development, and (4) Social Well-Being. The displays are consistent with the intent of the Principles and Standards.

## Part III - Abbreviated Environmental Quality Plan

An environmental quality plan, consistent with the intent of the Principles and Standards, but which is abridged in detail, has been developed by an interdisciplinary team. It is an alternative plan to the selected plan and is formulated to enhance environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain natural and cultural resources and ecological systems. This plan was formulated from information and data obtained during the investigative and analysis phases of project planning. Formulation began with the inventory and recognition of the watershed problems and needs. Desired environmental effects, as translated from the problems and needs, provided a basis for examining appropriate water and land resource use and management opportunities. Opportunities that emphasized contributions to the component needs were selected and are shown as plan elements of the abbreviated envrionmental quality plan. The cost of \$2,500,000 for its installation is a preliminary estimate.

Implementation of features of this environmental quality plan would require acceptance by the local people. Adequate legal authorities

do exist for installation; however, funding for all plan elements is presently not available through existing legislative authorities.

#### BAYOU GROSSE TETE WATERSHED

#### Louisiana

Section 1 - Discount Rate Comparison
On the basis of a discount rate of 6.1250 percent, the
total average annual benefits of this project are \$1,257,500.
Based on 1975 construction costs, the average annual
costs of this project are \$249,800. The ratio of project
benefits to project costs is 5.0 to 1. Total average
annual benefits excluding secondary benefits are estimated
to be \$1,156,200 providing a benefit-cost ratio of 4.6
to 1.

# SELECTED ALTERNATIVE NATIONAL ECONOMIC DEVELOPMENT ACCOUNT Bayou Grosse Tete Watershed, Louisiana

	Components	Measures of Effects 1/(Dollars)
The value	e to users of increased outputs	
of goods	and services	
Bene	eficial effects:	
A.	Flood prevention	\$ 585,850
В•	Drainage	537,350
C.	Utilization of unemployed and	
	underemployed labor resources	
	1. Project construction	20,000
	2. Operation, Maintenance, Replacement	6,000
Tota	al beneficial effects	\$1,149,200
The value	e of resources required for a plan	
Adve	erse effects:	
A∙	Channel work with appurtenant structures	
	1. Project installation	\$ 157,200
	2. Project administration	21,100
	3. Operation, Maintenance, Replacement	65 <b>,</b> 200
Total adv	verse effects	\$ 243,500
Net benef	icial effects	\$ 905,700

<sup>1/</sup> Average annual.

## SELECTED ALTERNATIVE REGIONAL DEVELOPMENT ACCOUNT Bayou Grosse Tete Watershed, Louisiana

	<u>Components</u> .				Measures of Effects 1/  State of Louisiana Rest of Nation(dollars)				
Α.	Inc	ome				(4012415)			
	Bene	efic	ial	effects:					
	1.	The							
		goo	ds a	nd services to users resi	.ding				
		in	the	region					
		a.	F1o	od prevention	\$	585,850		-	
		b.	Dra	inage		537,350		_	
		c.	Uti	lization of unemployed an	ıd	26,000		-	
			und	eremployed labor resource	s-				
			pro	ject construction and OM&	R				
	2.	The	va1	ue of outputs to users re	siding				
		in	the	region from external econ	omics				
		a.	Sec	ondary		119,000			
Total	l ber	nefi	cial	effects	\$	1,268,200		-	
	Adve	erse	eff	ects:					
	1.	The	va1	ue of resources contribut	ed				
		fro	m wi	thin the region to achiev	e '				
		the	out	puts					
		a.	Mu1	tiple-purpose drainage an	ıd				
			f1o	od prevention channel wor	k				
			1)	Project installation	\$	74,800	\$	82,300	
			2)	Project administration		1,100		20,000	
			3)	OM&R		65,200		0	
Total	adv	/ers	e ef	fects	\$	141,100	\$	102,300	
Net e	effe	ets			\$:	1,127,100	-\$	102,300	
В.	Emp:	Loym	ent						
	Bene	efic	ial	effects:					
	1.	Emp	loym	ent of project		-years of local			
		construction				over a 6-year period			

 $\underline{1}/$  Average annual. Applies only to income.

## SELECTED ALTERNATIVE REGIONAL DEVELOPMENT ACCOUNT (cont.) Bayou Grosse Tete Watershed, Louisiana

Components	Measures of Effects	<u>L</u> /
	State of Louisiana	Rest of Nation
2. Employment in OH&R	50 permanent semi-skilled jobs over the project period	-
Total beneficial effects	46 man-years of local labor over the project installation period	-
	50 permanent semi-skilled jobs over the project period	-
Adverse effects:		
1. Decrease in number and of jobs	types -0-	-
Total adverse benefits	-0-	-
Net beneficial effects	46 man-years of local labor over the 6-year project installation period	-
	50 permanent semi-skilled jobs	-
C. Population Distribution		
Beneficial effects:	The increased annual average farm income of about \$2,800 per farm should help slow the trends of decreasing number of farms and out-migration. The project will create a need for 46 manyears of local labor over the project installation period and 50 permanent semi-skilled jobs.	-
Adverse effects:	-	-
D. Regional Economic Base and	Stability	
Beneficial effects:	Flood protection and improved drainage provided by the project will reduce the risks of agriculture, enable increased efficiencies of agricultural production, and bring about increases in farm income.  Average annual net farm income will increase \$1,123,200. The project will create a need for 46 man-years of local labor over the project installation period and 50 permanent semi-skilled jobs in an area which has been classified by the Economic Development Administration as eligible for financial assistance under Title IV because of severely depressed economic conditions.	-

 $<sup>\</sup>underline{1}/$  Average annual. Applies only to income.

#### SELECTED ALTERNATIVE REGIONAL DEVELOPMENT ACCOUNT (cont.) Bayou Grosse Tete Watershed, Louisiana

Components

Measures of Effects $^{\underline{1}/}$ 

State of Louisiana

Rest of Nation

Flood protection and improved drainage are essential to continue agricultural productivity and the prevention of loss of farm income in the watershed.

Adverse effects:

<sup>1/</sup> Average annual. Applies only to income.

# SELECTED ALTERNATIVE ENVIRONMENTAL QUALITY ACCOUNT Bayou Grosse Tete Watershed, Louisiana

#### Components

#### Measures of Effects

Beneficial and adverse effects:

- A. Areas of Natural Beauty
- Seedlings planted in spoil areas as part of the project measure will increase the aesthetic value.
- 2. Spoil areas shaped according to design, and vegetated with various grasses will present a pleasing appearance.
- 3. Improved agricultural conditions as a result of the project will present attractive pastoral scenes.
- 4. Selected trees will be preserved along the channel berm and spoil areas to maintain the natural beauty.
- 5. Channel work will conform as close as possible to the present alignment to preserve the natural setting.
- 6. Channel areas will be cleared of debris to create a more aesthetically pleasing appearance.
- 7. Channel work will be performed from one side. This will preserve as much of the existing conditions as possible.

# SELECTED ALTERNATIVE ENVIRONMENTAL QUALITY ACCOUNT (cont'd.) Bayou Grosse Tete Watershed, Louisiana

#### Components

### A. Areas of Natural Beauty (cont.)

#### B. Quality considerations of water, land, and air resources

### C. Biological resources and selected ecosystems

#### Measures of Effects

- 8. During construction, areas will be disturbed creating a temporary undesirable appearance.
- 9. Rural tranquility will be reduced due to increased agricultural production.
- 1. Sediment from sheet erosion over the entire watershed will be reduced from 4.4 tons to 4 tons or 10 percent per acre per year.
- 2. Turbidity will decrease.
- 3. During construction there will be a slight increase in air noise pollution.
- 4. Construction will cause some minor erosion and downstream sedimentation.
- 5. The reduction in sediment will reduce the amount of pesticides and fertilizers entering aquatic environments.
- 1. The clearing of 300 acres of forest land will reduce habitat for forest wildlife species.
- 2. The conversion of 360 acres of wooded channel bank and forest land to open land will increase habitat for open land species.

#### SELECTED ALTERNATIVE ENVIRONMENTAL QUALITY ACCOUNT (cont.) Bayou Grosse Tete Watershed, Louisiana

#### Components

Biological resources and

C.

#### Measures of Effects

- Rabbit habitat along channels selected ecosystems (contd.) disturbed by the project will revert to original carrying capacity following construction when vegetation such as native
  - forbs, grasses, brush, and vines are reestablished.
  - 4. Upland wildlife habitat will be maintained or improved, and/or created on 32,640 acres.
  - 5. The crop and forage base will be maintained and improved.
  - Channel work will be performed from only one side, thereby retaining much natural vegetation and terrestrial habitat.
  - 7. Plant succession following construction will be accelerated by planting seedlings.
  - 8. Aquatic organisms will be temporarily affected by project construction.
- D. Historical, Archaeological, and Geological
- No known archaeological or historical sites will be disturbed.
- Ε. Irreversible and Irretrievable 1. Channels will preclude the Commitments use of 714 acres for any other purpose for the life of the project.

# SELECTED ALTERNATIVE SOCIAL WELL-BEING Bayou Grosse Tete Watershed, Louisiana

#### Components

#### Measures of Effects

Beneficial and adverse effects:

- A. Real Income distribution
- The project will create one permanent job for area residents each year during the 50-year project period.
- 2. Regional income benefits of \$1,268,200 will be created. The percent of distribution of this income by income classes is not readily available.
- 3. Local costs borne by the region total \$141,100. The percent of distribution of this cost by income classes is not readily available.
- B. Life, health, and safety
- Out-of-bank flow will be reduced 73 percent, thereby reducing flood damages accordingly.

### ENVIRONMENTAL QUALITY PLAN (Abbreviated)

#### ENVIRONMENTAL PROBLEMS

Two major problems affecting the quality of the human environment in this watershed are flooding and inadequate drainage. Throughout most of the watershed, these problems act in combination and are considered inseparable due to the nearly level terrain which is readily inundated by the accumulation of direct precipitation and overflow of inadequate channels. These problems occur on approximately 60,200 acres.

Sediment deposited by floodwater results in inconveniences to the residents of the watershed. It is undesirable under foot, produces dirty conditions, adds to the effort of maintaining clean homes, and detracts from the aesthetic value of the watershed.

Water remaining in standing pools after high water recedes becomes stagnant and oftentimes odorus. It harbors mosquitoes and becomes a potential source for disease. These pools are also an attractive nuisance for children.

Trash and litter transforted by high water is unsightly and unsanitary. This condition, along with the after effects of high water in general, attracts rodents which carry diseases.

Sediment transported by excess runoff is occasionally detrimental to fish habitat and other aquatic watershed populations in the watershed.

The conversion of forest land to cropland in the watershed is causing a net loss in both game and nongame species of wildlife. Loss of forest land is resulting in a loss of habitat for white-tailed deer, squirrels, swamp rabbits, wild turkeys, and many nongame forest wildlife species. Forest land is being converted to open land habitat for bobwhite quail, mourning doves, cottontail rabbits, and nongame species. These open land species are limited in number due to the "clean farming" associated with intensive crop production. Clean farming provides inadequate cover; when the crops are harvested, a vast amount of wildlife cover is totally and suddenly removed leaving cover only along fence rows, drainage ditches, and in scattered odd areas.

Soybeans and other crops lose growth due to excessive wetness caused by inadequate drainage. Pastureland is also adversely affected by poor drainage. Undesirable grasses persist and water-tolerant weeds flourish. These fields exhibiting poor growth condition detract from the aesthetic value of the watershed.

Trash dumping and littering is a problem in scattered areas. This is aesthetically undesirable, unsanitary, and conducive to stream pollution.

#### COMPONENT NEEDS

Environmental component needs for the watershed consist of improved drainage, erosion, sediment reduction, fish and wildlife habitat improvement and development, forest land management, enhancement of the aesthetic value, and proper waste disposal.

#### PLAN ELEMENTS

The elements of this Environmental Quality Plan consider the components of the environmental quality objective. These components include areas of natural beauty; land, air, and water quality; biological resources; and historical, archaeological, and geological concerns.

Land treatment conservation measures as an element include conservation cropping systems, drainage land grading, drainage mains and laterals, crop residue management, pastureland and hayland management and planting, forest land management including wildfire control, and wildlife habitat management. These measures would be applied to approximately 39,000 acres at a cost of about \$700,000.

Fish farming could also be developed. This would involve small impoundments with an indicated total water surface of 500 acres, costing an estimated \$500,000.

It is estimated that 38,000 acres of cropland and pastureland on the more poorly-drained soils could be reverted to bottom land hardwoods at an estimated cost of \$750,000.

The problem of trash dumping and littering could be alleviated by enacting and enforcing ordinances and conducting public campaigns against dumping and littering. Large waste receptacles could be placed throughout the parish and emptied regularly. Additional sanitary landfills could also be established for a wider distribution of waste disposal. This program is estimated to cost \$300,000.

Upland wildlife habitat development and improvement can be realized by establishing wildlife management practices that would include occasional hedgerows across open fields, and planting wildlife shrubs in odd or unused small areas of farms and other tracts of land. Indications are that a program of this nature would cost approximately \$250,000. This could be a program with economic inducements provided to land users to get them to participate.

#### ENVIRONMENTAL EFFECTS

#### Areas of Natural Beauty

This plan would visually improve the landscape through improved vegetation, fewer weeds and undesirable vegetation. Areas of erosion will also be minimized.

#### Quality Consideration of Water, Air, and Land Resources

This plan would reduce sediment borne by the water. Soils used within their capability would minimize erosion. Water quality would be improved by the installation of land treatment measures and other plan elements.

#### Biological Resources and Selected Ecological Systems

Installation of land treatment measures would maintain and/or improve upland habitat for both game and nongame species which would increase the potential populations of these animals. Wetland wildlife habitat would be improved and managed which would provide the potential for increasing fish and wildlife species associated with this habitat type.

Habitat for forest wildlife would be improved by the conversion of cropland and pastureland, on the poorly drained or frequently flooded soils, to forest land. This action would also result in a loss of habitat for open land wildlife species.

#### Irreversible and Irretrievable Effects

The 500 acres of land committed to ponds for fish farming would be an irretrievable effect. This commitment would have remaining resource values beneficial to wildlife.

Gropland and pastureland converted to 38,000 acres of bottomland hardwoods would have an irretrievable effect on openland wildlife habitat.

A capital investment of \$2,500,000 for the installation of this project would be irretrievable.

The total installation cost of this Environmental Quality Plan would amount to an estimated \$2,500,000.

### Institutional Arrangements Available and Needed for the Implementation of the Environmental Quality Plan (EQ Plan)

Legal entities of government exist which would enable implementation of the Environmental Quality Plan. These include parish government and joint powers of parish government and soil and water conservation districts.

Private, State, and Federal programs are available to provide financial and technical assistance for both land acquisition and the establishment of measures included in the Environmental Quality Plan.



### PART II

# ENVIRONMENTAL IMPACT STATEMENT

# BAYOU GROSSE TETE WATERSHED

Pointe Coupee Parish, Louisiana



#### PART II

USDA-SCS-EIS-WS-(ADM)-76-2-(F)-LA

BAYOU GROSSE TETE WATERSHED Pointe Coupee Parish, Louisiana

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alton Mangum, State Conservationist Soil Conservation Service

Sponsoring Local Organization

Upper Delta Soil and Water Conservation District
Post Office Box A
New Roads, Louisiana 70760

Pointe Coupee Parish Police Jury Post Office Box J New Roads, Louisiana 70760

February 1976

PREPARED BY
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Post Office Box 1630
Alexandria, Louisiana 71301



#### PART II - FINAL ENVIRONMENTAL IMPACT STATEMENT

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USDA ENVIRONMENTAL IMPACT STATEMENT

BAYOU GROSSE TETE WATERSHED PROJECT

Pointe Coupee Parish Louisiana

Prepared in Accordance with Sec. 102 (2)(C) of P.L. 91-190

#### SUMMARY

- I. Final
- II. Soil Conservation Service
- III. Administrative
- IV. Description of Project Purpose and Action: This project is for watershed protection, flood prevention, and drainage in Pointe Coupee Parish, Louisiana. It is to be implemented under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666) as amended.

Approximately 115 miles of channel work with appurtenant structures that include one grade stabilization structure and structures for water control (pipe drops) will be installed. Loss of bottom land hardwoods will be minimized. The channel work will involve clearing and shaping on 1 mile, clearing only on 9 miles, new construction on 3 miles, and enlargement by excavation on 102 miles. This work will be done to improve water management in a flatland watershed that is 52 percent cropland and grassland. Of the 112 miles of work proposed on existing streams or channels, about 107 miles have ephemeral flow, about 4 miles have intermittent flow, and 4 miles have ponded water.

V. Environmental Impacts: Floodwater and drainage problems will be alleviated resulting in higher quality crops, increased crop yields, and decreased costs of agricultural production. Average annual flood damages to agriculture will be reduced about \$532,100 or 73 percent. Average

annual benefits from improved drainage will amount to about \$483,600 and more intensive land use benefits would be approximately \$107,500. The total of these benefits of \$1,123,200 represents an average annual increase in net farm income to farmers in the watershed. Approximately 700 farmers and their families would be benefited. About 2 percent of these families would be of minority groups whose income would increase above the poverty level.

Approximately 54,600 acres of cropland and pastureland will directly benefit from the project of combined land treatment and structural measures. An additional 16,700 acres will be benefited by land treatment measures only.

Installation of the project and its operation and maintenance will create 46 man-years of work during the installation period and 50 man-years throughout the project period.

Sheet erosion will be reduced from 328,000 tons per year to 260,000 tons. Erosion induced by the construction process will produce 17,784 tons of sediment during the 6-year construction period. Of this amount, approximately 2,837 tons will be delivered to False River.

Clearing 360 acres of forest land and existing channel rights-of-way will reduce forest game habitat. Open land wildlife species will temporarily increase from this conversion. Forest management practices will help to maintain the wildlife carrying capacity of existing forest lands. "Endangered" wildlife species will be affected by the loss of 20 acres of potential habitat to channel enlargement and by the conversion of 340 acres of forest land habitat to open land habitat.

#### VI. Alternatives Considered:

- A. Land Treatment Only
- B. Land Use More Tolerant of Wet Conditions
- C. Floodproofing and Land Treatment
- D. Channel Work and Land Treatment
- E. No Project Action

VII. Comments have been received from the following agencies:

Louisiana Commission on Intergovernmental Relations
Louisiana Department of Public Works
U.S. Department of Health, Education, and Welfare
U.S. Department of Transportation
Geological Survey - U.S. Department of the Interior
U.S. Department of the Interior
Louisiana Forestry Commission
Advisory Council on Historic Preservation
U.S. Environmental Protection Agency
Louisiana Stream Control Commission
U.S. Department of Commerce
Louisiana Wildlife and Fisheries Commission

VIII. Draft Statement Transmitted to CEQ on December 1, 1975.



USDA SOIL CONSERVATION SERVICE FINAL ENVIRONMENTAL STATEMENT 1/

for

Bayou Grosse Tete Watershed Pointe Coupee Parish, Louisiana

#### AUTHORITY

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended.

#### SPONSORING LOCAL ORGANIZATION

Upper Delta Soil and Water Conservation District Pointe Coupee Parish Police Jury

#### PROJECT PURPOSES AND GOALS

The purposes of this project are watershed protection, flood prevention, and drainage.

Goals of the project are:

- 1. Improve farming conditions to increase farm family incomes and improve living conditions.
- 2. Reduce average soil loss to a level consistent with sound conservation farming methods.
- 3. Increase the level of protection from flooding and alleviate wetness problems on agricultural land in order to increase economic returns.
- 4. Accelerate the going land treatment program so that approximately 70 percent of the watershed will be adequately treated by the end of the project installation period in order to realize the benefits from the planned structural measures of the project.
- 5. Install project measures in a manner which will be least damaging to wildlife habitat. Measures will be installed to minimize losses to fish and wildlife where applicable.

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 $<sup>\</sup>underline{1}/$  All information and data, except as otherwise noted, were collected by the Soil Conservation Service, and Forest Service, USDA.

#### PLANNED PROJECT

#### Land Treatment Measures

Land treatment is basic to all watershed protection. Needed land treatment measures will be planned and installed by land users in the watershed. Assistance will be provided by the Upper Delta Soil and Water Conservation District with technical assistance provided by the Soil Conservation Service. Technical assistance for the treatment of forest lands will be provided by the U.S. Forest Service cooperating with the Louisiana Forestry Commission and the Upper Delta Soil and Water Conservation District. This assistance will be provided to land users, local authorities, developers, and planning groups.

Land treatment measures necessary to adequately treat 50,200 acres of cropland and pastureland will be installed during the installation period. Approximately 8,150 acres of forest land will be treated under the going and accelerated forest management program. The remaining acres of cropland and pastureland will also be treated to some degree. The land treatment measures that will be installed and their functions are as follows:

#### Function

Bedding

Elevating the surface of flatland into a series of broad, low ridges separated by shallow parallel furrows, to provide improved surface drainage.

Conservation Cropping System

Growing crops in combination with needed cultural and management measures, including the use of rotation that contains grasses and legumes to improve or maintain good physical condition of the soil; protecting the soil during periods when erosion usually occurs; and helping control weeds, insects, and diseases.

Crop Residue Management

Using plant residues to protect the cultivated fields during critical erosion periods.

Land	Treatment	Measures

#### Function

Drainage Mains and Laterals

Constructing open drainage ditches to a designed size and grade to remove surface water for maximum plant growth.

Drainage Land Grading

Reshaping the surface of land needing drainage by grading to planned slopes to improve drainage, providing for more effective utilization of rainfall, and improving equipment operation and efficiency.

Drainage Field Ditch

Constructing open drainage ditches for collecting and removing of excess water within a field.

Land Smoothing

Removing irregularities on the land surface to provide a more uniform surface for irrigation water application, to improve surface drainage, to obtain more uniformity in planting and cultivating, and to improve equipment operation efficiency.

Pasture and Hayland Management

Properly using or treating pastureland and hayland to provide maximum livestock forage and to control erosion.

Pasture and Hayland Planting

Establishing and reestablishing long-term stands of adapted species of perennial, biennial, or reseeding forage plants for livestock grazing and for controlling erosion.

#### Land Treatment Measures

#### Function

Structures for Water Control (Pipe Drops)

Using structures where the force of flowing water is sufficient to cause erosion. These structures provide a means of lowering the water from a higher elevation to a lower one in a short distance without causing erosion damage.

Wildlife Upland Habitat Management Retaining, creating, or managing wildlife habitat other than wetland to provide maximum food and cover.

Forest Land Wildlife Habitat Managementa/

Retaining, creating, or managing forest land for wildlife habitat to provide food and cover.

Wildlife Wetland Habitat
Management

Retaining, creating, or managing wetlands for wildlife habitat to provide food and cover.

Forest Stand Improvement Cuttinga/

Cutting and removal of poor form, diseased, and less desirable tree stems in the forest stands.

 $\underline{a}/$  Measure that will be applied with Forest Service technical assistance.

Because detailed soil surveys play an intricate role in all land use planning, the soils in the watershed will be surveyed.

In order to adequately treat agricultural land, the land treatment measures will be installed singly or in combination as needed. The practices that are applicable to cropland are bedding, conservation cropping systems, and crop residue management. In addition to these, drainage land grading, drainage mains and laterals, drainage field ditches and structures for water control (pipe drops) and wildlife upland habitat and wetland wildlife habitat will be installed where conditions require their installation. Accelerated technical assistance for land treatment will result in 30,000 acres of cropland being adequately treated during the installation period.

Technical assistance will be provided to land users through the soil and water conservation district to install measures that will create open land wildlife habitat. Plots 1 to 5 acres in size totaling 400 acres and scattered throughout the watershed will be planted to wildlife food and cover on open land. These plantings will include bicolor lespedeza, ryegrass, browntop millet, corn, and clovers and will attract deer, dove, quail, and rabbits.

Conservation measures applicable to pastureland are pasture and hayland management, pasture and hayland planting, and drainage practices as needed. During the installation period, 19,800 acres of pasture will be adequately treated. The remaining acres of pasture will have some measures installed as needed.

The areas drained by the planned M-1 and M-2 systems will receive first consideration for land treatment installation in the watershed because these two systems outlet into False River and are the first ones scheduled for completion. This will provide for early installation of land treatment measures concurrently with the construction of channel works in order to assure that these practices will be installed in the shortest possible lapse of time following completion of the channel work. This will minimize the amount of sediment delivered to False River during this period of time.

Approximately 6,150 acres of forest land will be managed for wildlife habitat. Included are 950 acres that will be managed for wildlife wetland habitat. These areas will be located throughout the project area on individual farms where existing conditions are compatible with this practice. Multiple use of forest land for wildlife will be enhanced by the installation of some of the practices installed on cropland and pastureland.

Forest land treatment on scattered areas throughout the watershed will be established on 2,000 acres consisting of stand improvement cutting and 5,200 acres of release and timber stand improvement for wildlife habitat improvement. In addition, the going cooperative Forest Fire Control Program will continue on the 50,900 acres of forest land in the watershed.

In addition, partial land treatment will be installed on 27,876 acres. This land while not adequately treated according to the definition of adequate land treatment will have beneficial effects to some degree.

The individual land users have the responsibility of installing the indicated land treatment measures.

Experiences have shown that land treatment measures do materialize once proper drainage outlets are provided. For example, the installation period for six watersheds in southern Louisiana has essentially been completed and 100 percent of the land treatment has been accomplished.

The Agricultural Stabilization and Conservation Service administers programs that provide financial inducement for installing some land treatment measures previously discussed.

#### Structural Measures

Structural measures in this plan are designed primarily to reduce flood damage and improve farm drainage. During installation, full consideration will be given to avoiding adverse effects to fish and wildlife resources.

Structural measures consist of improving the water carrying capacity of channels and constructing appurtenant grade stabilization and water control structures to reduce erosion. This planned work is shown on the Project Map. (See appendix  $B_{\bullet}$ )

About 133 miles of existing channels were identified for study and then classified for type of channel and flow condition. Detailed surveys and analyses revealed that project-type work was necessary on 112 miles of these and no work was needed on the remainder. Of this 112 miles, 1 mile will be cleared and shaped, 9 miles will be cleared, and 102 miles will be enlarged by excavation.

Additionally, 3 miles of new channels will be dug. These 3 miles have no defined channel at present. The tabulation on page II-11 exhibits types and lengths of channel work and the acres occupied before and after project installation.

The soils where channel excavation will take place were investigated to determine their characteristics for stable channel design. With the exception of one location all materials encountered were CL, CH, or MH with a plasticity index in excess of 10. Based on criteria for "Allowable velocities for Unprotected Earth Channels"1/material with this high an index is stable when the velocity does not exceed 4 feet per second if the water carries a suspended load. An exception is in the M-1 system where a CL material with

<sup>1/</sup> U.S. Department of Agriculture, Soil Conservation Service, Engineering Division, Planning and Design of Open Channels, Technical Release No. 25, December 15, 1964.

AREA OCCUPIED BY CHANNEL WORK

	E	xcavati	ion	Cle	ar & Sha	ape	C1	ear Only	y		Adequate	
Channel	Length				Before		Length	Before	After	Length		After
Number	Miles	A	cres	Miles	Acı	res	Miles	A	cres	Miles	A	cre
			01. /			0	0					
M-1	5.15	27.4 11.7	81.4 30.1	0 .68	0 3.5	7.6	0	0	0	0	0	0 <b>0</b>
1.=1. L-1Bi	3.03	7.0	9.5	0	0	0	.61	4.5	6.0	0	0	0
L-1BIA	1.31	7.2	11.2	ő	Ö	Ö	0	0	0	. 30	3.2	3.2
L-1B1A1	.96	5.1	7.3	Ö	0	ō	Ō	ō	Ō	0	0	0
L-181B	.76	2.3	5.3	0	0	0	0	0	0	.40	1.5	1.5
L-1B1B1	.18	.4	1.2	0	0	0	0	0	0	0	0	0
L-1C(L)	5.26	30.1	46.7	0	0	0	0	0	0	0	0	0
L-1C1	0	0	0	0	0	0	0	0	0	.24	.7	. 7
L-1C1A	1.16	0	7.7	0	0	0	0	0	0	0	0	0
L-1C2	.41	1.1	2.4	0	0	0	0	0	0	0	0	0
L-1C(U) L-1C3	2.46	2.8	21.8 5.2	0	0	0	0	0	0	0	0	0
M-2	3.33	16.9	44.1	Ö	Ŏ	Ö	ő	ő	Ö	.69	16.8	16.8
L-2A	1.27	3.1	9.7	Ŏ	Ō	ō	Ö	ō	ō	.28	2.3	2.3
L-2B	2.02	5.2	17.2	0	0	0	0	0	0	0	0	0
L-2C	1.06	4.6	8.8	0	0	0	0	0	0	0	0	0
L-2D	1.43	4.0	10.0	0	0	0	0	0	0	0	0	0
L-2E	. 57	4.1	7.4	0	0	0	0	0	0	0	0	0
M-3	0	0	0	0	0	0	3.75	69.4	74.4	0 , 5	0	0
L-3A L-3A1	,68 1.82	5.5 0	5.5 12.1	0	0	0	0	0	0	.45 0	3.3 0	3.3
L-3A1 L-3A2	.25	.7	1.8	0	0	0	0	0	0	0	0	0
L-3B	0.23	0 ,	0	Ö	0	Ö	.53	1.6	4.5	.57	3.4	3.4
M-4	ō	Ö	Ö	0	<u>0</u> ·	Ō	0	0	0	13.42	130.3	130.3
L-4A	2.53	32.8	44.7	0	0	0	0	0	0	1.33	21.7	21.7
L-4Al	5.71	36.0	59.2	0	0	0	0	0	0	.50	1.0	1.0
L-4A1A	3. <b>3</b> 2	20.5	28.9	0	0	0	0	0	0	.28	.3	.3
L-4A1A1ª/		8.7	12.8	0	0	0	0	0	.0	0	0	0
L-4A1B L-4A1B1ª/	.76	1.7	4.6	0	0	0	2.27	11.4	19.2	0	0	0
L-4A1B1-	.53 2.37	2.9 13.1	4.3 19.5	0	0	0	0	0	0	0	0	0
						-				U	U	U
L-4A3ª/	1.99	11.0	16.3	0	0	0	0	0	0	0	0	0
L-4B	3.16	11.8	27.6	0	0	0	0	0	0	.47	5.3	5.3
L-4B1ª/ L-4Cª/	2.46	13.5	20.2	0	0	0	0	0	0	0	0	0
L-4E4/	1.80	10.0 4.0	14.7 5.9	0	0	0	0	0	0	0	0	0
L-4E18/	.21	1.2	1.7	0	0	ŏ	0	Ö	0	Ö	0	0
L-4F8/	1.55	8.6	12.7	Ŏ	Ö	ŏ	Ö	ŏ	ŏ	ŏ	ŏ	ŏ
L-4G <u>a</u> /	. 95	5.3	7.8	0	0	0	0	0	0	Ō	Ö	ō
L-4G1ª/	. 27	1.5	2.2	0	0	0	0	0	0	0	0	0
L-4H	. 92	2.7	6.6	.15	.4	1.1	0	0	0	.75	2.2	2.2
L-41ª/	.74	4.1	6.1	0	0	0	0	0	0	0	0	0
M-5 M-6 <u>a</u> /	12.41	129.0	138.1	0	0	0	0	0	0	0	0	0
M-78/	1.70	8.9 9.4	13.2 13.9	0	0	0	0	0	0	0	0	0
M-88/	1.80	10.0	14.7	0	0	Ö	Ö	ő	0	0	0	0
M-9	1.11	3.8	9.8	ŏ	ŏ	ŏ	1.62	7.3	17.1	.15	.7	.7
L-9Aª/	1.14	6.3	9.3	0	0	0	0	0	0	0	0	0
L-9R4/	.91	5.0	7.4	0	0	0	0	0	0	0	0	0
M-104/	2.18	12.1	17.8	0	0	0	0	0	0	0	0 .	0
L-10Aa/	.47	2.6	3.8	0	0	0	. 0	0	0	0	0	0
M-11 <u>#</u> / M-12	1.89	10.5	15.5	. 0	0	0	0	0	0	0	0	0
M-12 L-12A	2.84 1.56	16.2 6.8	32.0 16.1	.0 0	0	0	0	0	0	1.29 0	7.3 0	7.3
L-12Ba/	1.50	8.6	12.1	0	0	0	0	0	0	.28	1.4	0 1.4
L-12B24/	.42	2.3	3.4	0	0	0	0	0	0	0.28	0	0
M_128/	3.12	17.2	28.7	ŏ	0	ŏ	Ö	Ö	0	0	Ö	0
$M-14\frac{a}{a}/M-15\frac{a}{a}$	.66	3.7	5.4	ŏ	ő	Ö	ŏ	ŏ	ő	Č	ŏ	0
M-15 <sup>4</sup>	.47	2.6	3.8	0	0	Ö	Ō	ŏ	Ö	Ö	ŏ	Ö
M-16 <sup>H</sup> /	.44	2.4	3.6	0	0	0	0	0	0	0	0	0
L-16A8/	.19	1.1	1.6	0	0	0	0	0	0	0	0	0
M-17ª/ L-17Aª/	1.21	6.7	9.9	0	0	0	0	0	0	0	0	0
L-17A2/ M-182/	.23	1.3	1.9	0	0	0	0	0	0	0	0	0
11-10-	1.14	6.3	9.3	0	0	0	0	0	0	0	0	0
Total	105.35	613.6	1,013.5	.83	3.9	8.7	8.78	94.2	121.2	21.40	201.4	201.4
			,		_,,		0.70	J4.2	121,2	21.40		201.4

a/ Estimated

a Plasticity Index of 7 at the surface and a nonplastic ML was encountered at a depth of 7 feet. Two additional holes were augered and logged to delineate this silty stratum. The information obtained from these holes indicated that the silt extends for about 1 1/2 miles. Further investigation will be made in this area prior to final design.

Velocities of the water in the project channel range from a high of 3.60 feet per second under an "as built" condition to a low of 0.46 foot per second under an "aged" condition.

Land rights will consist of access for construction, operation, and maintenance. The grantor will retain full ownership and control of his land except that he may not interfere with the functioning, operation, and maintenance of the project.

Of the total 115 miles of channel work, about 107 miles have ephemeral flow, about 4 miles have intermittent flow, and 4 miles have ponded water. None of the work is on channels with perennial flow. These flow regimens will remain the same after the project is installed.

The plan includes work on 111 miles of manmade or previously-modified channels, 1 mile of unmodified natural channel, and 3 miles of nonexisting or practically no defined channels.

Classification of the type of channel and flow characteristics is shown in the following:

Type of Channel	Length Project Channelsmile	Length Requiring Work
Manmade or previously modified Natural or previously unmodified Nonexisting or no defined channel	132 1 3	111 1 3
Total	136	115
Flow Characteristics		
Ephemeral Intermittent Ponded Water	113 11 12	107 4 4
Total	136	115

Excavation will normally be done from only one side of the channels except as noted earlier. Consideration will be given to leaving undisturbed the side providing the most shade during the summer months.

All channel slopes will be seeded after construction. Berms will be seeded after construction traffic ends. Spoil on open land will normally be spread. Spoil in forest land will be stacked, shaped, and seeded. Depending upon soil type and season of the year, species such as the following will be used: Common bermudagrass, Pensacola bahiagrass, lespedezas, Browntop millet, ryegrass, and fescue.

About 150 acres of spoil deposits in forest land will be planted to hardwood seedlings. Species of seedlings such as oak, willow oak, and pecan will be used depending on soil types and availability. The spoil will be seeded with temporary vegetative cover until the seedlings are established. Vegetative cover will be established on the remaining disturbed areas in forest land and natural plant succession allowed to occur.

The 40 miles of channels in forest land and the 19 miles of channels having wooded banks adjacent to cropland are environmentally and aesthetically important. Efforts will be made to leave as many trees as requirements for construction and operation and maintenance will allow. Spoil will be stacked in the vicinity of trees in a manner that will not kill them. Trees to be left on the inside of the channel will be chosen on the basis of their size, form, color, leaf texture, bark, and flowering or fruiting characteristics.

The construction techniques mentioned above are illustrated by the drawings, figures 4 and 5, appendix F.

Figure 3, appendix F, shows a typical structure for water control (pipe drops). Structures of this type or similar appurtenant measures will be installed to prevent erosion and thus protect the channel from excessive sedimentation, reduce maintenance cost, and insure proper functioning of the channels.

A grade stabilization structure (see figure 2 of appendix F for a typical structure) will be installed at the outlet end of Channel L-1B and is an integral part of the channel.

As the channel work is being performed, berms will be maintained and spoil will be placed in a manner to allow maintenance equipment access to the channel. Where necessary, culverts will be placed in laterals entering channels so that continuity of access can be maintained. Where applicable, structures for water control (pipe drops) will be constructed in a manner that will allow maintenance equipment continuous access. Figure 1, appendix F, shows a typical profile and cross section of a channel.

The increase in right-of-way area required for construction is summarized in the following tabulation:

Land Use		With Pro		
	Channel	Berm	<u>Spoil</u>	<u>Total</u>
Open Land Wooded Channel Banks Forest Land	118 194 402	58 60 <u>110</u>	91 109 203	267 363 715
Total	714	228	403	1,345
	<u> W</u>	ithout P	roject	
	Channe1	Berm	Spoil	<u>Total</u>
Open Land Wooded Channel Banks Forest Land	107 190 385	5 15 <u>51</u>	10 28 122	122 233 558
Total	682	71	160	913
	In	crease W	ith Proje	ct
	Channel	Berm	<u>Spoil</u>	<u>Total</u>
Open Land Wooded Channel Banks Forest Land	11 4 <u>17</u>	53 45 59	81 81 <u>81</u>	145 130 <u>157</u>
Total	32	157	243	432

The low-lying land located in the south central portion of the watershed referred to as Portage Swamp acts as a control for the channels outleting into this area. The limits of the ponding with a 2-year maximum stage were determined to provide a basis for design. The limits to which a measure of protection could feasibly be provided exist above this area.

Project channel work extending downstream from the benefited areas into the low-lying area was planned to provide adequate protection for open land in the benefited area but will not provide adequate agricultural protection to areas now in forest downstream from the benefited areas. The planned project channels will not affect the drainage of Portage Swamp.

The runoff from channel systems M-1 and M-2 enter directly into False River. These two channel systems will not be constructed

concurrently with each other. Installation of one channel system will be completed before channel work starts on the other. This will allow vegetation to be established on the first constructed channel system before channel work starts on the other.

In order to further reduce the amount of construction sediment entering this lake, construction on the lower 8,600 feet of Channel M-1 will be delayed until construction on the remainder of the channel and its laterals has been completed. Some of the construction sediment will be filtered by the vegetation in the 8,600-foot length.

The grade stabilization structure on Channel L-1B will be installed before the construction of Channel L-1B and Channel M-1 below the confluence of Channel L-1B to prevent production of sediment by headcutting.

In channel systems M-1 and M-2 structures for water control (pipe drops) will be installed concurrently with channel work to reduce production of sediment from headcutting in side inlets.

Special construction techniques will be utilized to minimize adverse impacts on fish and wildlife habitat. These techniques are as follows:

- 1. Place spoil on both sides of Channels L-4A and segments of L-4A1 and L-4A-1A with natural drainage ways left open.
- 2. Place spoil on the left descending side of Channel L-3A-1 through the forested area.
- 3. Alternate construction of channel systems M-1 and M-2 so that one is completed before the other is started.
- 4. Excavate that portion of M-1 upstream from L-1B and all its laterals prior to excavating the lower portion of M-1.
- 5. Install grade stabilization structures in Channel L-1B prior to construction of Channel L-1B and Channel M-1 below the confluence of L-1B.
- 6. Eliminate excavation in forest land habitat at all points where flow characteristics can be sufficiently improved by any other practical method.
- 7. Limit excavation where possible to the east side of channels having intermittent flow or ponded water to minimize

increased water temperatures resulting from heating effects of the afternoon sun.

8. In channel systems M-1 and M-2 install structures for water control (pipe drops) concurrent with channel work.

Alteration, modification, or reconstruction of some existing facilities such as bridges, culverts, and pipelines will be necessary to insure proper functioning of planned structural measures. The work on the bridges involves the enlargement of the channel cross section by excavating under the bridge, reinforcing one or more bents of pilings, or lengthening a bridge in order to widen the channel. Work on the culverts involves replacing existing culverts with larger ones, lengthening existing culverts, or lowering the grade of existing culverts. Work on the pipelines involves the lowering or casing of existing pipelines. No bridges, culverts, or pipelines will be relocated.

This alteration, modification, or reconstruction includes, but is not limited to, 5 culverts on State and Federal highways, 60 bridges and 85 culverts on parish and private roads, 3 bridges and 1 culvert on railroads, pipelines at 60 locations, and utility lines and fences at about 500 locations. The work will be done prior to or concurrently with channel construction. Disturbed areas will be revegetated following construction. The specific location of existing facilities to be altered is shown on the design profiles and cross sections in the working files. Replacement of any State and Federal highway bridges or culverts will be coordinated with the Louisiana Highway Department early in the design phase prior to construction. Designs will be in accordance with current standards for traffic and type of highway. There are no relocations of residences or businesses anticipated.

The disposal of all clearing wastes and construction debris will be accomplished by burying, burning, or removal from the construction site. All burning will be conducted in accordance with the Louisiana Air Control Commission regulations and other applicable laws governing such operations. Noise levels will be monitored by the Soil Conservation Service and standards set by the Occupational Safety and Health Act will be followed.

The National Park Service will be notified if any previously unidentified evidence of cultural values or sites is discovered during detailed investigations or construction and the procedures in PL 93-291 will be followed. The National Advisory Council on Historic Preservation will be afforded an opportunity to comment if such sites are determined to be eligible for inclusion in the National Register of Historic Places in accordance with "Procedures for the Protection of Historic and Cultural Properties". Since

this is a federally assisted local project, there will be no change in the existing responsibilities of any federal agency under Executive Order 11593 with respect to archaeological and historical resources.

As of January 1975, the Advisory Council had no knowledge of any sites listed in the National Register of Historic Places as being actively nominated to the National Register which would be affected by this proposed project.

### Operation and Maintenance

The operation and maintenance of all phases of the completed project will be the responsibility of non-Federal groups, agencies, and individuals.

Individual land users and operators will have the responsibility of maintaining land treatment measures. The Soil Conservation Service through the soil and water conservation district program, will provide technical assistance to land users for the installation and maintenance of these measures. The Louisiana Forestry Commission, in cooperation with the Forest Service, will provide technical assistance necessary for maintaining land treatment measures under the going Cooperative Forest Management Program. The objective is to maintain adequate drains, vegetative cover, or other conservation practices on the land so that benefits from the project can be realized.

Operation and maintenance of all phases of the completed structural measures will be the responsibility of the Pointe Coupee Parish Police Jury. In addition to the 115 miles of channels to be worked, the jury will continue to maintain the system of channels that is now adequate. The methodical operation and maintenance of these channels and related structures will insure proper functioning of these measures and the realization of anticipated benefits. The estimated annual maintenance cost of structural measures is \$65,200.

The present maintenance tax for drainage is considered adequate for maintaining channels and appurtenant structures. Should these funds prove inadequate, the Sponsors have agreed to provide additional financing by an increase in revenue through normal taxing procedures.

Channel maintenance includes periodic cleanouts necessary to restore channels to their planned capacities, repair of bank erosion, control of vegetation, and repair or replacement of appurtenant structures. Maintenance of structures for water control (pipe drops) and grade stabilization structures include repairing rills around headwalls or wingwalls, replacing rock riprap as needed, maintaining or replacing vegetation on fills, repairing or replacing worn or broken parts, replacing short-life parts and all other activities essential to the safety and functioning of the structure. Maintenance of the aesthetics of the channel and structure sites shall be considered an important feature of the maintenance program.

Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used for maintenance equipment to reach the channels. Where no access is available, travel ways will be provided. The channels will be kept clear of excessive vegetation by mowing, hand labor, and the use of approved herbicides such as ammonium sulfamate, bromacil, and others registered with the Environmental Protection Agency (EPA) and approved by the United States Department of Agriculture (USDA). Pesticides presently approved will not preclude the use of other EPA registered and USDA approved pesticides developed during the life of the project. Spraying in the summer months when the channels have the least flow will lower the possibility of runoff carrying herbicides into other areas. Two mechanical cleanouts are anticipated during the life of the project. The amount of sediment to be removed each time will be small enough to be placed and smoothed in the planned rights-of-way.

Vegetation remaining on channel banks not disturbed during construction will be maintained. Trees left in channel rights-of-way for landscape purposes and those planted on spoil banks in the forest areas will not be destroyed by maintenance methods.

Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the Sponsors to have free access to all portions of the project measures at any reasonable time for the purpose of inspection, repair, and maintenance. The Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, after severe storms, and after the occurrence of any other unusual condition that might adversely affect the structural measures.

These joint inspections will continue for 3 years following installation of the structural measures. Inspection after the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection will include, but will not be limited to (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) brush control in channels, (4) structures for water control (pipe drops), and (5) general conditions.

The Sponsoring Local Organization fully understands its obligation for operation and maintenance and will execute a specific operation and maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of project measures. An example of an Operation and Maintenance Agreement for Structural Measures and an Operation and Maintenance Plan for Channels is shown in appendix D.

The method in which operation and maintenance is to be accomplished will be in accordance with procedures outlined in the Soil Conservation Service Operation and Maintenance Handbook for Louisiana.

December 1975

ESTIMATED PROJECT INSTALLATION COSTS

Bayou Grosse Tete Watershed, Louisiana

(Dollars)<u>a</u>/

		P.L. 566 Funds	Funds	Other Funds	Total
			Total Public	Total	Installation
Item	SCS	FS	Law 566	Other	Cost
Land Treatment	414,900	19,500	434,400	4,057,900	4,492,300
Structural Measures	1,641,180		1,641,180	1,218,220	2,859,400
TOTAL PROJECT	2,056,080	19,500	2,075,580	5,276,120	7,351,700

à/ Price base 1975

#### ENVIRONMENTAL SETTING

## Physical Resources

The Bayou Grosse Tete Watershed encompasses about 137,000 acres in the southern part of Pointe Coupee Parish. All land is privately owned. The watershed is a low-lying area surrounded by levees and high bank stream depositions. With minor exceptions, the watershed is bounded on the north and east by the Mississippi River, on the south by old river high bank depositions of the Mississippi River, and on the west by the East Atchafalaya Basin Floodway levee. It is located in the Lake Maurepas Subregion of the Lower Mississippi Water Resource Region. 1/

Incorporated towns in the watershed include New Roads, Morganza, Fordoche, and Livonia. Their populations according to the 1970 Census are 3,945; 836; 488; 611; respectively. It is estimated that 29 percent of the population is urban and 71 percent is rural. There are numerous small communities located throughout the area. The port of Baton Rouge, which is also the capital of Louisiana, is situated on the Mississippi River about 15 miles to the southeast.

Two major highways, Louisiana 1 and Federal Highway 190, serve the watershed. In addition, there is a network of farm-to-market roads. Two railroads, the Missouri-Pacific and the Pacific-Texas lines, also provide transportation services for the shipment of goods in and out of the watershed.

The entire watershed is underlain by a complex series of southerly dipping, interfingering deposits of clay, silt, sand, and gravel. Freshwater bearing sediments range in age from Miocene to Recent and dip at a rate of 50 feet per mile. The dip increases with depth to a maximum of about 75 feet per mile at the base of the freshwater section.

Historically, the watershed has been flooded each time the adjacent Atchafalaya and Mississippi Rivers have reached flood stage. Over the years, various agencies have assisted in preventing major floods from these rivers by constructing a system of levees.

 $<sup>\</sup>underline{1}/$  Water Resources Council, Water Resources Regions and Subregions For The National Assessment of Water and Related Land Resources, July 1970.

Under existing conditions, approximately 60,000 acres or 44 percent of the watershed is in need of flood prevention and drainage. The remaining 56 percent consists of land use tolerant to wet conditions, land that has adequate natural drainage, or land that has already been provided with adequate drainage systems.

As a basis for conservation planning, soils are grouped in accordance with the Land Capability Classification System.2/ These groupings are based on the limitation of the soil, damage risk, and response of crops to treatment.

Capability Classes, the broadest group, are designated by Roman numerals I through VIII. Class I soils have few limitations, the widest range of use, and the least risk of damage. The soils in the other classes have progressively greater natural limitations. Classes I through VII are applicable to this watershed. Classes I, II, and III are suitable for cropland, Class IV is marginal, and Classes V through VII are unsuited for cropland.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, "e" or "w" to the class numeral. The letter "e" shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation.

The general soil map of the watershed on page II-26 indicates the location of the soil associations in the watershed. These are the Commerce-Mhoon, Sharkey, Sharkey-Tunica, Commerce-Mhoon-Convent, and Sharkey-Swamp associations.

Approximately 48 percent of the soils in the watershed are comprised of the Commerce-Mhoon association. This association consists of poorly to somewhat poorly drained, nearly level, loamy soils. They are easy to work and to keep in good tilth, but they are likely to become cloddy if worked when wet. They are high in natural fertility. However, this does not preclude the need for fertilizers. They are well suited to most agronomic and pasture plants. These soils are in Capability Subclass IIw.

Drainage is generally needed. Drainage land grading or smoothing would improve drainage and increase efficiency in use of farm equipment. There is no restriction in cropping sequence provided that crops are adequately fertilized and crop residue management is applied.

<sup>2/</sup> A. A. Klingbeil and P. H. Montgomery, "Land Capability Classification," U.S. Department of Agriculture, Soil Conservation Service, Agriculture Handbook No. 210 (1969), p. 21.

The Sharkey association comprises about 39 percent of the soils in the watershed. They are poorly drained, level, clayey soils. Good tilth is difficult to maintain because of wetness and soil texture. Sharkey soils swell and seal when wet, become hard and crack when dry, and become cloddy when worked. They are high in natural fertility, but are well suited to a limited variety of crops. However, they are suited to a wide range of pasture plants. These soils are in Capability Subclass IIIw.

Removing excess surface water is the main management problem. Drainage land grading and smoothing would aid in improving drainage and increasing the efficiency of farm equipment, but the soil material is difficult to handle. There is no restriction on the cropping sequence, provided the crops are adequately fertilized and crop residue management is practiced.

The Sharkey-Tunica association comprises approximately 6 percent of the watershed. The cultivation of row crops on these soils is difficult because of the short irregular slopes, the narrow wet swales, and the surface texture. Hay generally can be harvested from the pasture during periods of peak growth. The soils are high in natural fertility and are suited to pasture plants. This association is in Capability Subclass IIIw.

Controlling runoff from the slopes and removing excess water from the swales are the main management problems. Drainage land grading and land smoothing would improve drainage, reduce the erosion hazard, and make it easier to operate farm equipment. However, large amounts of earth would have to be moved, and the soil material is difficult to handle.

The Commerce-Mhoon-Convent association comprises only 2 percent of the watershed. This association makes up an area of poorly or somewhat poorly drained loamy soils in the north central part of the watershed and occurs on short irregular found is a dominant physical feature of the watershed. Approximately 50 percent of the watershed drains into Bayou Grosse Tete through this swampy, forested area.

Removing excess water from the swales is the main management problem. Drainage land grading and land smoothing would improve the drainage, reduce the hazard of erosion, and increase the efficient use of farm equipment, but a large amount of earth would have to be moved.

The remaining 5 percent of the watershed area consists of the Sharkey-Swamp association. These soils are frequently or continuously flooded. The Swamp soils are unsuited to cultivation and are restricted largely to pasture or range, woodland, or wildlife habitat. They are in Capability Subclass VIIw. The Sharkey soils are subject to overflow and are covered with water for long periods, mainly in the winter and spring. They are high

in natural fertility, but because of the frequency and duration of overflow, these soils are not suited to cultivated crops and not too well suited to pasture plants. These soils are in Capability Subclass Vw. The area where these soils are found is a dominant physical feature of the watershed. Approximately 50 percent of the watershed drains into Bayou Grosse Tete through this swampy, forested area.

Sheet erosion is the only appreciable form of erosion in the watershed. Other forms such as streambank, gully, and roadside erosion exist, but the amount is negligible.

Sediment damages have not been separated from floodwater damages. Most of the sediment damages are in terms of downstream effects because they have not been separated from flood damages.

Water quality samples taken on Bayou Grosse Tete had 55 mg/l suspended solids concentration on March 24, 1975 and 40 mg/l on February 29, 1975. Concentrations on Channel M-1 on the same dates had 30 mg/l and 125 mg/l, respectively.

At the present time, approximately 83,000 tons of sediment per year are being delivered to the watershed boundary and False River. Of this amount, 24,000 tons are being delivered to False River, and 59,000 tons are being delivered to the watershed boundary.

There are two mineral resources produced in Pointe Coupee Parish: (1) petroleum and natural gas, and (2) clay. In 1970, the value of the mineral products was \$31,162,000 and in 1971 the value was \$29,427,000.

Ground water occurs mostly under artesian conditions. The maximum depth to the base of the freshwater is over 2,600 feet. The aquifer system consists of as many as 12 separate, freshwater-bearing sands.

The coarse sands and gravels of the alluvial aquifer are the first permeable deposits encountered when drilling. Water levels in this aquifer fluctuate with the stages of the Mississippi River. Wells screened in this aquifer are capable of yielding in excess of 4,000 gpm. Water from this aquifer is moderate to very hard, calcium bicarbonate type water that contains iron in excess of the recommended limits. The bottom of this aquifer contains saltwater in the southwestern part of the parish. Water temperature is approximately 70 degrees Fahrenheit. Pumpage averaged about 2.5 mgd in 1964. Practically all this water was used for processing sugarcane and for irrigation.

#### SETTING

Other aquifers that occur below the alluvial aquifer have better quality water for domestic use. Municipalities utilizing ground water for domestic purposes are Fordoche, Morganza, and New Roads. They obtain their water primarily from the Pliocene although New Roads has one well pumping from the Miocene. These municipalities pump a maximum of 800,000 gallons per day.

Land use in this watershed is as follows:

Land Use	Acres	Percent
Cropland	41,700	30
Pastureland	30,800	22
Forest Land	50,900	37
Other <u>a</u> /	13,600	_11
Total	137,000	100

<u>a</u>/ Includes roads, farmsteads, lakes, rural nonfarm residences, towns, etc.

The forested portion of the watershed contains primarily bottom land hardwoods and cypress. Forest owners have accomplished about 12,200 acres of forest improvement over the past 10 to 15 years.

The present use of the forest land is primarily outdoor recreation activity in the form of hunting and fishing.

The forest land plant community is comprised of the following:

Overstory species include water oak, live oak, willow oak, sugarberry,
sweetgum, baldcypress, green ash, water tupelo, water locust,
boxelder, sweet pecan, bitter pecan, sycamore, American elm,
and willow; species in the understory include Japanese honeysuckle,
devils walkingstick, hawthorne, deciduous holly, buttonbush,
elderberry, switchcane, swamp-privet, blackberry, palmetto, trumpetcreeper,
greenbrier, rattan, roughleaf dogwood, American beautyberry,
and reproduction from species in the overstory.

The agricultural land is comprised of 72,500 acres of cropland and pastureland. Major crops include soybeans, cotton, corn, and sugarcane.

Vegetation of the pastureland includes Common bermudagrass, bahiagrass, dallisgrass, fescue grass, clover, ryegrass, and small grains such as oats and winter wheat. The fallow fields contain a diversity of native vegetation. Common species include various Andropogons, goldenrod, senecio, panic grasses, paspalums, dock, sesbania, doveweed, johnsongrass, common ragweed, aster, and sumpweed.

Wetlands, as defined in USDI Circular No. 393/ comprises 11,770 acres. Of this total, 10,000 acres are Type 1 wetlands, 60 acres are Type 3 wetlands, 740 acres are Type 5 wetlands, and 970 acres are Type 7 wetlands. Following is a summary of the wetlands data:

Type	Description	Acres
1 3	Seasonally flooded basins or flats Inland shallow fresh marsh	10,000
5	Inland open freshwater	740
/	Wooded swamps	970
Total		11,770

The majority of these wetlands are concentrated in four general areas. Most of the 10,000 acres of Type I wetlands are located in the Sharkey-Swamp soil association (see General Soil Map on page II-26) near the center of the watershed. About 660 acres of Type 7 wetlands are found in two locations: 295 acres at the southern end of False River and 365 acres on the immediate northwest side of Channel M-12 (see Project Map, appendix B). Even though channel M-12 is to be located in close proximity to these wetland areas, it has been determined that work performed on this channel will have no effects on them. Most of the Type 5 wetlands are the borrow pits along the East Atchafalaya Basin Floodway Levee. The Type 3 wetlands range in size from 10 to 35 acres with the major portion of them located in the area between False River and the Mississippi River, locally known as The Island.

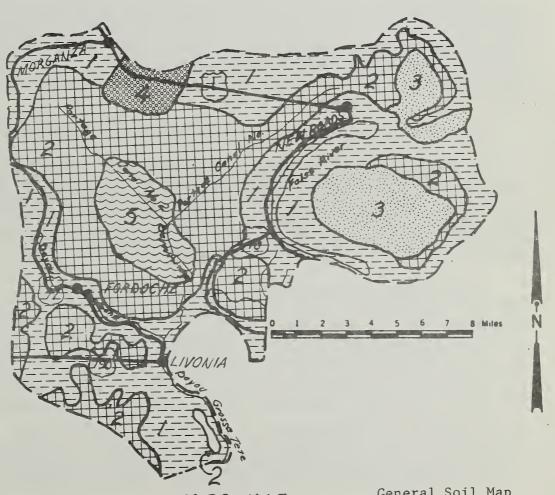
Aquatic vegetation found along the edges and in the ponds, borrow pits, and other water areas includes cattail, giant cutgrass, water hyacinth, alligator weed, pondweed, duckweed, arrowhead, waterprimrose, rushes, sedges, and various algal species.

The drainage pattern of the watershed is formed by tributaries of Bayou Grosse Tete draining a major part of the watershed. These tributaries consist of bayous, manmade channels, lakes, and meander sloughs in a fan-shaped drainage pattern that concentrates in a low, swampy, wooded area in the south-central part of the watershed. This area has the configuration of a bowl. The area is shown on the project map as the Portage Swamp and extends

<sup>3/</sup> U.S. Department of the Interior, Fish and Wildlife Service, Wetlands of the United States, Circular No. 39 (Washington: U.S. Government Printing Office, 1956), pp. 20-22.

#### SOIL ASSOCIATION

- 1 Commerce-Mhoon Association
- 2 Sharkey Association
- 3 Sharkey-Tunica Association
- 4 Commerce-Mhoon-Convent Association
- 5 Sharkey-Swamp Association



IBERVILLE PARISH General Soil Map
Bayou Grosse Tete Watershed
Pointe Coupee Parish, Louisiana
U.S. Department of Agriculture
Soil Conservation Service

Compiled from SCS General Soil Map of Pointe Coupee Parish

August 1975

above and below the delineation of ponding with a 2-year maximum stage. Water levels and discharge from this area are controlled by its low elevation in relation to its natural outlet. The tributaries of the borrow channel for the East Atchafalaya Basin Protection Levee, which drains the western part of the watershed, enter the borrow channel at many points and consist of manmade channels and bayous.

The lower 0.5 mile of Discharge Bayou, the outlet channel of False River, and Bayou Grosse Tete downstream from this channel to Portage Canal, have intermittent flow. Portage Canal has intermittent flow in its lower 12 miles. Bayou Grosse Tete downstream from Portage Canal has perennial flow. The other channels have ephemeral flow. Approximately 12 miles of channels have ponded water.

Bayou Grosse Tete, which becomes a high-bank channel in the south part of the watershed, flows southeast to Lower Grand River. The borrow channel flows southeast to Upper Grand River, which flows southeast to a complex of interconnecting channels and lakes including Lake Verret, Lake Palourde, Bayou Boeuf, Bayou Cocodrie, Bayou Penchant, Lower Atchafalaya River, and to the Atchafalaya Bay, which is on the Gulf of Mexico.

The average annual runoff is approximately 22 inches.

An adequate supply of water for municipal and industrial needs is obtained with wells from the Pliocene aquifer. The water is slightly hard, but the quality is good for normal municipal uses and many industrial uses. No excessive drawdown problems exist, and the capacity for increased withdrawal is large. The alluvial aquifer is used primarily for agricultural purposes.

Water quality standards established for certain streams and water bodies within the State include Bayou Grosse Tete proper and False River. This criteria is based on their present and potential uses and the existing water quality indicated in data accumulated through monitoring programs of various agencies. The criteria specifically applies with respect to substances attributed to waste discharges or the activities of man as opposed to natural phenomena. All waters in the State shall be capable of supporting desirable aquatic life. General criteria (see appendix H) do not supersede specific exceptions to any one or more of the specific criteria (see appendix H) if the exception is specifically stated in a specific water quality standard.

### Present and Projected Population

Based on 1970 Census data, the population of the watershed was approximately 13,400 people. According to OBERS projections, the population in the Lake Maurepas Subregion of the Mississippi Water Resource Region in which this watershed is located is projected to increase by 80 percent by the year 2020.

Much of this increase is expected to occur in metropolitan and urban areas of the subregion. Within the watershed itself, no sizable increase is anticipated due to its rural nature. During the period from 1950 to 1970, the population in the parish increased from 21,841 to 22,002, while the rural population decreased from 19,023 to 14,802.

About 56 percent, or 1,855 families, in Pointe Coupee Parish had income below the poverty level according to the 1970 Census. This would represent a total of 8,500 individuals. Approximately two-thirds of these people or about 5,500 are of minority races. These conditions would also be representative of the watershed.

#### Economic Resources

Basic industries such as farming, mining, and forestry utilize natural resources to make materials available for processing and consumption. Processing and manufacturing industries such as cotton gins, grain elevators, petroleum refining plants, and lumber mills, alter materials from basic industries to make useful products. Service industries such as merchandising, transportation, and medicine provide goods and services to consumers.

An indication of this distribution, based on the Pointe Coupee Parish Census data for 1970, showed that 16 percent of the employed labor force was engaged in basic industries; 15 percent was in agriculture, forestry, and fisheries; and 1 percent was employed in mining. Of the remainder of the employed labor force, 29 percent was employed in the processing and manufacturing industries; and 55 percent was employed in the service industries.

Approximately 61 percent of the total population of Pointe Coupee Parish is in the watershed. This population is approximately 29 percent urban and 71 percent rural. Approximately 53 percent of the rural population of the parish is in the watershed. 4/

<sup>4/</sup> Based on 1970 Census of Population.

Approximately 52 percent of the rural population in Pointe Coupee Parish or about 8,200 people are of minority groups. About 1,100 are farm and 7,100 are rural nonfarm residents. The median years of school completed by these groups are 6.5 years.

Approximately 2,240 are employed. Of this amount about 3 percent are farmers and 12 percent are farm laborers. Those employed in agriculture have a median income of about \$1,900. These conditions also apply to the watershed.

The median family income for Pointe Coupee Parish was about  $4.960_{-5}$  Unemployment rates in the parish had reached 12.2 percent as of January 1975.

The major farm and ranch enterprises are sugarcane, soybeans, corn, cotton, and beef cattle. Industries related to agriculture include grain elevators, flying services, feed mills, and retailing of supplies and equipment.

Crop acreages of the watershed include approximately 13,400 acres of sugarcane; 18,400 acres of soybeans; 7,300 acres of corn; 2,200 acres of cotton; and 500 acres of rice. Approximately 30,800 acres of pasture are used for beef production.

It is estimated that the watershed contains 700 farms averaging 167 acres. Approximately 40 percent are full-time family-type farms. The majority of the remainder are part-time farms.

Agricultural land values in the watershed are approximately \$500 to \$1,000 per acre. These values vary with location, soil capability, and improvement.

The watershed is in the Lower Mississippi Region Comprehensive Study area. Data used in the environmental statement were coordinated with data used in the study reports.

Approximately 150 miles of Federal, State, and parish roads in the watershed provide good access to markets under normal conditions.

<sup>5/</sup> U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General, Social, and Economic Characteristics, Final Report PL(1)-C20, La. (Washington: U.S. Government Printing Office, 1972).

A Resource Conservation and Development Project is proposed for the vicinity of New Roads to reduce urban flood damages. The estimated cost of this program is \$340,900. Average annual damages to this area will be reduced approximately \$39,900, and more than 300 people will be benefited.

## Plant and Animal Resources

An oxbow lake named False River lies entirely within the watershed. This lake was created by a change in the course of the Mississippi River in 1722. It contains approximately 3,300 surface acres and has an average depth of approximately 21 feet. There are 22 miles of shoreline, which are highly developed with many camps, homes, stores, and the town of New Roads.

Estimates provided by the Louisiana Wild Life and Fisheries Commission show a total of 40,950 man-days of sport fishing annually on False River. This lake is also used extensively for pleasure boating, skiing, and swimming.

False River has by far the most important fishery of the watershed both in terms of quantity and quality as illustrated by the population data on page II-33. The most dominant tree species along the edge of False River are black willow with scattered cypress and oaks.

Aquatic vegetation in the lake includes coontail, potamogeton, water stargrass, duckweed, water hyacinths, many forms of algae, and Eurasian water milfoil.

False River is a medium to rich calcium lake (see water quality data on pages II-31 and 32) which exhibits summer stratification. It is classified as a hard water lake because its bicarbonate alkalinity is greater than 84 ppm  $\mathrm{HCO}_3$ . The status of the fishery resource of the lake was determined by the Louisiana Wild Life and Fisheries Commission based upon four 1-acre samples taken in 1971. See page II-33 for tabulation of sampling.

<u>LARGEMOUTH BASS</u> - 89.22 pounds per acre - 117 fingerling bass per acre.

These figures are approximately six times higher than population data indicates for any lake in Louisiana. Since there are tremendous poundages of available bass per acre and the large numbers of fingerlings indicate spawning has been more than adequate, no recommendations can be made to improve the bass population.

Water Quality Data

False River (Northern end) (74/03/21 - 74/11/12)

		Unit of	Number of			
Parameter		Measurement	Samples	Mean	Maximum	Minimum
Water	Temperature	Centigrade	10	22.2140	28,8000	18,7100
Incident Light	Remaining	Percent	ಣ	17,3333	50,0000	1,00000
Turbidity	Transmission	Percent	7	85.7571	88.0000	83,2000
Transparency	Secchi Disk	Inches	3	55,0000	0000.09	45.0000
Conductivity	Field	Micromhos	10	253,500	310,000	226.000
Dissolved Oxygen	!	mg/1	8	6.05000	8.40000	1.00000
Hd	-	Standard Unit	10	3.04299	00000.6	7.51000
Total Alkalinity	CaCO <sub>3</sub>	mg/1	10	135,800	142,000	129,000
Ammonium (NH3-N)	Totaľ	mg/1	10	.080000	.220000	.020000
Total Nitrogen (N)	KJEL	mg/1	10	.760000	1,10000	000009.
Nitrate $(NO_3)$ and Nitrite $(NO_2)$	Total	mg/1	10	.097000	.220000	.030000
Phosphate	Total	mg/1 P	10	.078000	.100000	.055000
Phosphorus	Ortho	mg/1 P	10	.024400	.048000	.005000
Chlorophy11	A	$_{\rm Ug/1}$	က	23.5666	40.5000	14.9000
Depth of Sample Station	<b>!</b>	Feet	က	20.0000	24.0000	16,0000

Source: Environmental Protection Agency

Water Quality Data

False River (Southern end) (74/03/21 - 74/11/12)

		Unit of	Number of			
		Measurement	Samples	Mean	Maximum	Minimum
Water	Temperature	Centigrade	13	22.0830	29.3000	16.2000
Incident Light	Remaining	Percent	2	1.00000	1.00000	1.00000
Turbidity	Transmission	Percent	6	86.2221	90.1000	84.0000
Transparency	Secchi Disk	Inches	က	0000.09	72.0000	48.0000
Conductivity	Field	Micromhos	13	256.385	307.000	208.000
Dissolved Oxygen	1	mg/1	11	4.53636	8.80000	.100000
Hd	1	Standard Unit	13	7.89615	00000.6	7.27000
H Total Alkalinity	CaCO <sub>3</sub>	mg/1	13	136.846	143.000	130.000
Ammonium (NH3-N)	Total	mg/1	13	.220769	.770000	.020000
Total Nitrogen (N)	KJEL	mg/1	13	.869230	1.40000	.500000
Nitrate $(NO_3)$ and Nitrite $(NO_2)$	Total	mg/1	13	.095384	.310000	.030000
Phosphate	Total	mg/1 P	13	.120538	.390000	000090.
Phosphorus	Ortho	mg/1 P	13	.049308	.161000	.003000
Chlorophy11	A	Ug/1	3	25.5333	42.9000	14.6000
Depth of Sample Station	1	Feet	က	36.6667	40.0000	31,0000

Source: Environmental Protection Agency

False River Fish Population Data -/

	Fish of	Availabl			rmediate			ngerling		
	Min.			Range in			Max.		Pounds	Total
Species	Length	/Acre	/Acre	Length	/Acre	/Acre	Length	/Acre	/Acre	Lbs/Ac
PREDATORY GAME FISH										
Largemouth bass	9	43.75	84.50	5.0- 8.9	22	4.07	4.9	117.0	0.65	89.22
Black crappie	7	4.50	3.85	5.0- 6.9	2.75	.16	4.9	1.2	Trace	4.02
Total		48.25	88.35		24.75	4.23	· · · · · · · · · · · · · · · · · · ·	118.2	0.65	
Total		40.22	00.32		24.73	4.25		110.2	0.03	
NONPREDATORY GAME FISH										
Bluegill sunfish	5	187.5	24.82	3.0- 4.9	326.0	11.04	2.9	375.0	1.62	37.48
Longear sunfish	5	3.2	.30	3.0- 4.9	11.0	. 37	2.9	-	-	.67
Redear sunfish	5	210.5	31.36	3.0- 4.9	132.9	4.01	2.9	2.5	.01	35.38
Spotted sunfish	5	-	-	3.0- 4.9	1.0	Trace	2.9	-	-	-
Warmouth	5	16	3.11	3.0- 4.9	4.0	.14	2.9	81.2	1.75	5
Total		417.2	59.59		474.9	15.56		458.7	3.38	
			77,137		11.7.2	23.30		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
NONPREDATORY FOOD FISH										
Drum	10	1.50	3.60	5.0- 9.9		-	4.9	-	-	3.60
Yellow bullhead	7	. 25	.06	5.0 <b>-</b> 6.9	2	0.91	4.9	-	-	.97
Carp	16	1.50	15.35	5.0- 15.9	-	-	4.9	-	-	15.35
Lake chubsucker	7	5	1.57	5.0- 6.9	-	-	4.9	27.2	0.07	1.64
Total		8.25	20.58		2	0.91		27.2	0.07	
							,			
PREDATORY FOOD FISH	10	0.50	11.50		0.75	0.17				
Channel catfish	10	9.50	11.56	5.0- 9.9			4.9	-	-	11.73
Spotted gar	24	.50	1.10	7.0- 23.9		1.07	6.9	-	-	2.17
Bowfin	14 `	. 25	. 90	5.0- 13.9	-	-	4.9	-	-	.90
Total		10.25	13.56		1.50	1.24		-		
PODACE ETCU										
FORAGE FISH Gizzard shad	8	313.50	140 65	4.0- 7.9	0.25	0.02	3.9	_	_	140.67
Golden shinners	6	.75	.13	4.0- 7.9		0.02 -	3.9	-	_	
Miscellaneous minnows	6	.75		4.0- 5.9		-	3.9	12.7	0.09	.13
Tabal.		215	1/0 70		2.05	0.00				
Total		315	140.78		0.25	0.02		12.7	0.09	

 $<sup>\</sup>underline{a}/$  Data developed by Louisiana Wild Life and Fisheries Commission from an average of four 1-acre rotenone samples taken June 14 through 18, 1971.

August 1975

BLACK CRAPPIE - 4.02 pounds per acre - 1.2 fingerlings per acre.

These figures are low due to several reasons: (1) False River is an open lake and there is very little area suitable for crappie spawning areas, (2) the few areas suitable for spawning are 90 to 95 percent choked up with obnoxious aquatic vegetation, and (3) the sunfish population is in an over-populated condition. In Louisiana, research observations have indicated that crappie will cease to produce in an area as it becomes overcrowded with sunfish.

SUNFISH - 77.86 pounds per acre - 458.7 fingerlings per acre.

The number and size of the sunfish found in population samples indicate a definite trend toward over population. These sunfish have reached numbers that far exceed the food supply. This results in large numbers per acre of small to intermediate sunfish and very few large ones.

CHANNEL CATFISH - 11.73 pounds per acre.

This figure, although not much below normal for similar lakes in Louisiana, could possibly be increased by addition of spawning sites. This figure could probably be higher under present conditions, but present sampling gear prohibited samples being made in many areas of the lake appearing to be good channel catfish habitat.

ROUGH FISH - 21.56 pounds per acre (Gar, Freshwater drum, Bullheads)

This figure is well within the game fish, rough fish ratio and no recommendations are made to reduce this poundage.

GIZZARD SHAD - 140.89 pounds per acre - numerous fingerlings too small to pick up.

Poundage figures for shad make up approximately 40 percent of the total poundage per acre figure. Although this might seem high, it is far below the shad composition percentage found in most Louisiana lakes. Concern arises when the shad population makes up more than 65 percent of the total population.

About 40,000 fingerlings of a hybrid cross between white and striped bass were released in False River in June 1975. This fish has a fast growth rate early in its life span, is hardier, and has the ability to consume large quantities of forage fish such as shad.

The stocking of these fish is part of an experimental program by the Louisiana Wild Life and Fisheries Commission to develop a new sport fishery. Creel census' and population samplings will be maintained for several years to determine its success.

Other lake fisheries are found in Grand Bayou (90 acres), Wickliffe Pond (10 acres), farm ponds (410 acres), and numerous borrow pits along roads (60 acres) and levees (240 acres).

Bayou Grosse Tete, False Bayou, the lower 4 miles of The Chenal, and the lower 6 miles of Portage Canal (M-4) have stream fisheries. In addition, there are 12 miles of project channels which contain a fishery due to ponded water. Of lesser importance, due to habitat and flow conditions, is the fishery found in the 11 miles of intermittent channels within the project. Based on fish population samples taken on upper Bayou Grosse Tete near the outlet of Channel M-3 during May 1975, these intermittent, stream-type fisheries have an average standing crop of 357 pounds per acre. About 10 percent are game fish, 40 percent are commercial fish, and 50 percent are forage fish. (Refer to tabulation on page II-36).

The more important sport fish species in the lakes, bayous, and channels are bluegill, redear sunfish, largemouth bass, yellow bass, and crappies. Commerical fish species of importance are buffalo, freshwater drum, gar, carp, shad, and catfishes. Twenty-eight different fish species were collected in the fish population sample. Of these species two, the Gulf Pipefish and the Southern Hogchoker, are unusual and infrequently collected fish species in the project area. There are no previous records of these two species occurring in the watershed. The Gulf Pipefish and the Southern Hogchoker inhabit fresh, brackish, and saltwater. The Gulf Pipefish has been collected from only two freshwater sites in Louisiana. Both these sites were oxbow lakes of the Mississippi River in northeast Louisiana, Lake St. John, and Lake Bruin. There are no known "threatened" fish species in the project area.6/

Approximately 113 miles of ephemeral flow channels are included as project channels of which 108 miles will be altered. Fish populations in these channels are highly variable ranging from 0 to 300 pounds per acre due to the ephemeral flow. During high flow and backwater flooding, these channels are used by some fish for spawning and feeding areas and by lower food chain organisms such as insects and their larva, amphibians, and crustaceans for areas of production. These areas are also important to the downstream fisheries of Bayou Grosse Tete. Ephemeral channels also help to filter water, thereby improving or maintaining water quality in downstream areas.

<sup>6/</sup> Robert R. Miller, Threatened Freshwater Fishes of the United States, "Transactions of American Fisheries Society," No. 2 (Kansas: Allen Press, 1972) pp. 239-252.

Bayou Grosse Tete at Channel M-3 Fish Population Data 4

Species  PREDATORY GAME FISH  Largemouth bass Yellow bass	Min. Length	Availabl Number /Acre	Pounds /Acre	Range Length	Number		Max.	Number	Pounds	Total Lbs
PREDATORY GAME FISH Largemouth bass		/Acre	/Acre	Length						-
Largemouth bass	a				/Acre	Acre	Length	/Acre	/Acre	Percent
	٥									
Yellow bass	7	3	3.3	5.0 - 8.9			4.9			0.9
	6	14	2.2	4.0 - 5.9			3.9			.6
White crappie	7	12	5.1	5.0 - 6.9	1	0.3	4.9			1.5
Chain pickerel	12			6.0 - 11.9	1	. 2	5.9			.1
Total		29	10.6		2	.5				3.1
NON-PREDATORY GAME FISH										
Bluegil1	5	41	5.7	3.0 - 4.9	303	4.7	2.9	105	0.5	3.1
Longear sunfish	5	20	2.7	3.0 - 4.9	174	3.4	2.9	7	.1	1.7
Redear sunfish	5	2	.5	3.0 - 4.9			2.9			.1
Green sunfish	5			3.0 - 4.9	1	.1	2.9			.1
Warmouth	5	19	5.5	3.0 - 4.9	8	.3	2.9	1	T	1.6
Total		82	14.4		486	8.5		113	. 6	6.6
NON-PREDATORY FOOD FISH										
Carp	14	14	45.2	7.0 - 13.9	3	2.1	6.9			13.2
Freshwater Drum	10	3	6.5	5.0 - 9.9	259	13.2	4.9	46	1.7	6.0°
Largemouth buffalo	16	1	1.8	5.0 - 15.9	3	3.5	4.9			1.5
Black buffalo	16			5.0 - 15.9	6	3.0	4.9			.8
River Carpsucker	10	7	3.9	5.09.9	3	.9	4.9			1.3
Total		25	57.4	<del></del>	274	22.7		46	1.7	22.8
PREDATORY FOOD FISH										
Channel catfish	10	8	3.6	5.0 - 9.9	84	9.2	4.9	31	.5	3.7
Flathead catfish	10	ĭ	20.0	5.0 - 9.9		,	4.9		••	5.6
Spotted gar	24	ī	2.3	7.0 - 23.9		27.8	6.9			8.4
Total		10	25.9		107	37.0		31	.5	17.7
FORAGE FISH										
Gizzard shad	8	375	105.9	4.0 - 7.9	391	59.4	3.9			46.3
Threadfin shad				4.0 - 5.9	769	9.2	3.9			2.6
Golden shiners	6	9	3.1	4.0 - 5.9			3.9	•		.9
Miscellaneous minnows				4.0 - 5.9	18	T	3.9			
Madtom				4.0 - 5.9	6	T	3.9			
Gulf Pipe fish					1	T				
Southern Hog Chocker					1	T				
Total		384	109.0		1,186	68.6				49.8
GRAND TOTAL			217.3			137.3			2.8	100.0

Total Standing - Crop = 357 lbs/acres

August 1975

 $<sup>\</sup>underline{\underline{\mathbf{a}}}/$  Data developed in cooperation with the Louisiana Wild Life and Fisheries Commission.

Forest land habitat comprises about 50,900 acres. Southern bottom land hardwoods make up the majority of forested acreage. This vegetative plant community is very productive, high-value habitat for both game and nongame wildlife species. This is illustrated by the fact that 20 of 23 game and furbearing animals (excluding waterfowl) found in Louisiana depend upon bottom land hardwoods for all or part of their natural habitat. Forest game species associated with the forested habitat include white-tailed deer, wild turkey, wood duck, mallard, woodcock, gray and fox squirrels, swamp and cottontail rabbits, and the black bear. Also, numerous species of nongame wildlife species utilize these forested areas as essential or useful habitat to provide food and cover. Some of the more common or interesting nongame forest wildlife species are included in the listing below and on page II-39.

 $A\cdot30,000$ -acre block in the central part of the watershed known as Portage Swamp is particularly suited for wildlife habitat. It is here that the major concentration of white-tailed deer is found though they thrive in all forested areas of the watershed. The population of these animals has increased to the level where eithersex hunting is now allowed.

This area was also stocked with wild turkeys in 1971.

Squirrels abound in the forested areas and their numbers are primarily dependent upon the mast crop. Squirrel hunting is a popular sport in the watershed area.

Open land habitat, which includes cropland and pastureland, totals 72,500 acres. Open land game species include the bobwhite quail, mourning dove, cottontail rabbit, and the woodcock. Woodcock and cottontail rabbits also utilize forested areas. Waterfowl make use of water areas, forested areas, and open fields. The tabulation on page II-38 gives the current estimated populations of game species.

Other common mammals, birds, reptiles, and amphibians present are the following:

- Mammals striped skunk, coyote, opossum, bobcat, armadillo, gray fox, red bat, cotton rat, southeastern myotis, Southern flying squirrel, least shrew, marsh rice rat, white-footed mouse, and Eastern wood rat.
- 2. Birds common crow, blue jay, Eastern bluebird, Eastern meadowlark, mockingbird, red-headed woodpecker, downy woodpecker, pileated woodpecker, screech owl, barred owl, great egret, cattle egret, snowy egret, great blue heron, Louisiana heron, little blue heron, yellow-crowned

SETTING

Current Estimated Populations of Game Species Bayou Grosse Tete Watershed, Louisiana $\frac{a}{}$ 

Species	Habitat Type	Acres	Number Per Acre(s)	Total In Watershed
Dove	Open Land	72,500	1/3	24,165
Quail	Open Land	72,500	1/20	3,625
Woodcock	Open Land and Forest Land	123,400	1/10	12,245
Squirrel	Forest Land	50,900	1/2	25,450
Deer	Forest Land	50,900	1/20	2,545
Rabbit	Open Land and Forest Land	123,400	1/10	12,340
Waterfowl (Resident)	Water Areas and Forest Land	54,300	1/75	725
	Water Areas, )Forest Land and Open Land	126,800	1/15	8,455
Wild Turkey	Forest Land	50,900	1/200	255
Black Bear	Forest Land	50,900	<u>b</u> /	<u>b</u> /

<sup>&</sup>lt;u>a</u>/ Data developed in cooperation with Louisiana Wild Life and Fisheries Commission.

 $<sup>\</sup>underline{b}$ / Population data not available.

night heron, blue-winged teal, hooded merganser, gadwall, red-tailed hawk, red-shouldered hawk, brown thrasher, house sparrow, and belted kingfisher.

- 3. Reptiles American alligator, canebrake rattlesnake, ground skink, five-line skink, green anole, southern fence lizard, Eastern garter snake, southern copperhead, western cottonmouth, broad-banded water snake, diamond-back water snake, gray rat snake, smooth softshell turtle, stinkpot turtle, red-eared turtle, and common snapping turtle.
- 4. Amphibians small mouthed salamander, marbled salamander, dwarf salamander, three-toed amphiuma, Fowler's toad, green treefrog, gray treefrog, bullfrog, southern leopard frog, lesser western siren, central newt, Eastern narrow-mouthed toad, bronze frog, upland chorus frog, southern cricket frog, and spring peeper.

Even though the American alligator is listed in paragraph 3 above as a common reptile in Pointe Coupee Parish and is neither rare nor endangered in Louisiana, it appears on the Department of the Interior's list of rare and endangered species except in Cameron, Calcasieu, and Vermilion Parishes.8/

In these three parishes, the populations are still treated as a threatened species under the "similarity of appearance" provision of the act. This provision enables the Federal government to assist states in controlling commerce in products of this kind. It also permits controlled hunting seasons to thin excessive populations.

In Louisiana the American alligator is making encouraging gains in populations. It is considered ecologically secure even though actual numerical levels are below the biotic carrying capacity in many areas. Available data indicates the primary threats to alligator populations are due to the absence of adequate regulations and enforcement mechanisms rather than biotic factors.

The Southern bald eagle, another "endangered" species, may be an infrequent visitor in the project area. Habitat conditions utilized by Bachman's warbler are available but no sightings have been reported.

<sup>8/</sup> U.S. Department of the Interior, Fish and Wildlife Service, "Threatened Wildlife of the United States," 1973 edition. Resource Publication 114, March 1973 (Revised Resource Publication 34).

Although the black bear is not on the list of "endangered" species, it is uncommon in Louisiana. The highest population in the State occurs in the vicinity of the project, and it is known to be present within the watershed.

## Recreation Resources

A 1974 inventory conducted by the Louisiana State Parks and Recreation Commission lists 41 recreational sites for Pointe Coupee Parish. Twenty-six of these are located in the watershed. These consist of three community recreation centers and one church and recreation center, having combinations of baseball, football, basketball, tennis, and volleyball facilities; five hunting camps; one rodeo arena; two historical and cultural exhibits; a gun club; a yacht club; a country club and golf course; nine privately-owned fishing facilities which are open to the public on a fee basis consisting of boat launch ramps, boat liveries, fishing piers, and, in some cases, small picnic and camp areas; one public boat launch ramp, and one privately-operated recreation area open to members and guests consisting of a swimming pool and small park.

Public access to the recreation areas listed above is generally good, and use is heavy during certain periods, particularly during the summer high-use season.

#### Archaeological, Historical, and Unique Scenic Resources

Parlange Plantation House at the junction of Louisiana Highway 1 and Louisiana Highway 78 is the only historic site listed in the National Register of Historic Places for Pointe Coupee Parish.

The location of two other historical and cultural sites in the watershed were provided by the Curator of Anthropology at Louisiana State University. These are the LeJeune House in New Roads and Wurtelle Memorial approximately 6 miles southwest of New Roads on Highway 1. They have been nominated for inclusion in the Register.

A survey by the Department of Geography and Anthropology of the Louisiana State University provided archaeological information for the watershed.

# Soil, Water, and Plant Management Status

Presently, 332 land users (56 percent of the watershed) have become cooperators with the Upper Delta Soil and Water Conservation

District. As a result, 263 soil and water conservation plans have been prepared, covering about 48 percent of the watershed. Of the planned conservation measures, an estimated 15 percent have been installed in the proper combinations to adequately treat 9,570 acres of cropland and pastureland at a cost of \$1,482,000 to the farmer.

## Projects of Other Agencies

A continuous levee along the west side of the Mississippi River was built by the Corps of Engineers, and it forms the north and part of the east boundary of this watershed. The Corps of Engineers has constructed the East Atchafalaya Basin Floodway (locally referred to as the "Morganza Floodway") from a point near Morganza to Morgan City to provide flood protection to a portion of south Louisiana. Part of this levee forms the western boundary of this watershed. When the levee was constructed, a continuous borrow channel was excavated along the east side of the levee to remove intercepted drainage. This channel serves as a drainage outlet for the land adjacent to it.

The State of Louisiana, Department of Public Works, under its State-parish drainage improvement program, has previously installed a system of channels. Due to subsequent changes in land use and normal deterioration, most of the channels are no longer adequate to provide the needed protection.

## WATER AND RELATED LAND RESOURCE PROBLEMS

## Land and Water Management

The soils in the watershed are high in natural fertility; however, this does not preclude the need of fertilizers. Because of the generally flat terrain and soil characteristics, erosion is not a serious problem, but wetness from accumulated runoff is. This problem is particularly severe in the absence of adequate outlets.

Wet, inadequately drained soils limit crop yields and create production problems. Sugarcane, on which a large segment of the agricultural economy of the watershed is based, is especially affected by these adverse conditions.

Good soil drainage and ample moisture are needed for profitable sugarcane production. Poorly-drained soils that remain saturated for considerable periods of time after heavy rains are unfavorable for the development of sugarcane roots. In addition, the plants are likely to deteriorate or be damaged by root diseases.

Harvesting of the sugarcane crop is often delayed because of the farmer's inability to operate farm equipment in the wet fields. When harvesting is delayed until the frost seasons begin, portions of the crops remaining in the field sustain considerable damage and part may be lost through spoilage.

Because of weed build-up, sugarcane land is generally fallow plowed after the three crops are harvested. This eliminates or retards weed growth, but at the same time, it increases the erosion and sediment rates.

These conditions also apply to soybeans and other crops produced in the watershed.

# Floodwater and Drainage Problems

Problems with flooding and prolonged wetness in the watershed are interrelated because the terrain is nearly level. Flooding from storm runoff aggravates and prolongs wet soil conditions caused by poor drainage and frequent rainfall. Channels that are not adequate to allow farm drainage systems to function properly are also not adequate to prevent excessive direct damages from flooding. To add to the problem, storm runoff amounts from saturated soils are larger than amounts from unsaturated soils of the same type.

The average annual rainfall is 60 inches. Rainfall of at least 4.2 inches in 48 hours occurs at an average rate of twice a year, 5 inches once a year, and 6.7 inches once in 3 years.

Damaging out-of-bank flows occur in parts of the watershed at an average rate of twice a year. Frequent flooding of smaller magnitudes results in greater average annual damages than do floods of greater magnitude which are less frequent.

Some of the channels that provide outlets for individual and group drainage systems are not adequate to allow efficient production of the crops and grasses grown in the watershed. In most instances, this is a result of intensified land use, or decreased channel capacity, caused by siltation and vegetative growth. In other instances, the outlet channels were never large enough.

The estimated average annual yields per acre under existing conditions are 22 tons of sugarcane, 34 bushels of corn, 23 bushels of soybeans, 435 pounds of lint cotton, 25 barrels of rice, and 200 pounds of beef.

Accumulations of runoff and flooding limit crop yields of sugarcane, cotton, corn, rice, and pasture. Yields are limited and quality is reduced, particularly in sugarcane and soybeans. In addition, wet conditions interrupt timely operations and increase production costs.

As an example, sugarcane normally produces three crops from a single planting, but reduced yields attributed primarily to poor drainage, wet conditions, and weed infestation are frequently encountered.

Total average annual inseparable agricultural damages attributed to floodwater and impaired drainage amount to an estimated \$1,015,700 on about 54,600 acres of cropland and pastureland. This acreage corresponds to the areas shown as areas benefited on the Project Map. (See appendix B.) These damages occur to agricultural crops and pasture. Some minor flood damages also occur to roads and bridges.

Existing poor drainage contributes to the mosquito problem. Stagnant pools of water and clogged channels are a source of prolific mosquito populations.

#### Erosion Damage

Sheet erosion is the only appreciable form of erosion in the watershed. Other forms such as streambank, gully, and roadside erosion exist, but the amount is negligible. At the present time, sheet erosion amounts to 266,000 tons per year. Under existing conditions, sheet erosion will increase to 328,000 tons per year due to land use changes that are anticipated to occur by 1985 due to more intensive use. Refer to the tabulation on page II-55.

#### Sediment Damage

Under existing conditions, the anticipated increase in erosion will increase the sediment yield to 104,000 tons per year by 1985. Of this amount, 42,000 tons will be delivered to False River, and 62,000 tons to the watershed boundary.

#### Recreation

The 1970 population 5 years of age and older within a 30 mile radius of the center of the watershed is estimated to be 340,000. This area includes 17 villages and towns, only 2 of which are considered urban. Population projections 1/2 to the year 1990 indicate an increase in the number of people in the 30-mile radius area.

The watershed is deficient in public water-based outdoor recreation facilities, although there are substantial water resources suitable for outdoor recreational use within the 30-mile radius study area. False River and Raccourci Lake, both old oxbow lakes created by the Mississippi River, are the two major lakes in the area. The banks of False River are almost completely developed for private use, chiefly for vacation cabins and cottages. Only minimal development exists on Raccourci Lake. Public recreational development on both lakes is very limited, being confined mainly to boat launch ramps which are too few in numbers to fully serve the public needs. Several streams and rivers are in or near the area. The best known are the Mississippi, Atchafalaya (and associated waterways in the Atchafalaya Basin), and Comite Rivers; Bayous Maringouin Sara, Grosse Tete, Courtableau, Plaquemine, and Teche; and Thompson Creek. The recreational potential of these waterways far exceeds the present use due to highly inadequate or nonexisting facilities. The vast Atchafalaya River Basin, the second largest area of its kind in the nation, has tremendous recreational potential. However, only a small portion of this potential has been realized by the public.

<sup>1/</sup> George C. Christon and Harris S. Segal, Population Projections to 1980 and 1990 for Louisiana and Its Parishes, Research Study No. 18 (New Orleans: Division of Business and Economic Research, College of Business Administration, University of New Orleans, 1973), pp. 21-22.

The only public recreational areas of significance within the 30-mile radius study area are the 100 acres of Audubon Memorial State Monument and the Locus Grove Cemetery, both in West Feliciana Parish, and the 633-acre Port Hudson Civil War historical site in East Baton Rouge Parish.

A sample of recreational needs based on the present population within the 30-mile radius includes 3,632 tent camping sites, 3,426 trailer sites, 2,794 picnic sites, 664 boat ramps, and 9 beaches and swimming areas of standard size.2/

There is a need for additional recreation facilities in the watershed, and local interest exists for developing these facilities. The development of reservoirs for water-related recreational use is limited by the flat terrain. However, opportunities do exist for the development of recreational facilities on existing streams and other bodies of water.

### Plant and Animal Resource Problems

A problem closely related to the small amount of forest habitat is the need for full utilization of the forest land for maximum aesthetics and quality of the local environment. Little timber management was performed in the past because of low economic returns. Most of the forest lands are now producing much less than they are capable of since the area is not managed primarily for timber.

Public access to most of the forested areas is severely limited. There are few all-weather roads to provide access and the limited number of unimproved roads are impassable during wet periods without four-wheel drive and winch-equipped vehicles. Posting of private land further restricts access by the general public. Poor roads and posting of private land also hinders access to most fishery resources. Access is also limited because of the lack of boat-launching facilities for public use on both the lakes and bayous.

Loss of forest land habitat is a problem concerning animals dependent upon this ecosystem. Clearing of bottom land hardwoods for agricultural production is depleting this habitat type. It is estimated that 13,000 acres have been cleared within the project area since 1965.

<sup>2/</sup> Louisiana State Parks and Recreation Commission, State of Louisiana, Outdoor Recreation Plan, 1975 through 1980 (Baton Rouge: Louisiana State Parks and Recreation Commission, 1974) p. 9.19, 9.20.

Aquatic weeds are becoming a problem to the fishery resource of False River. The Louisiana Wild Life and Fisheries Commission is presently engaged in controlling this problem.

All available hunting areas are already leased by hunting clubs and nonmembers have to go to other parishes and states to hunt. Large population centers such as nearby Baton Rouge are placing more and more pressure on the existing fish and wildlife resources.

## Water Quality Problems

Water quality of the lakes and ponds is generally high at the present time as illustrated by the water quality tabulation on page II-31 and II-32 for False River. There are no major water quality problems with these lakes and ponds.

The loss of forest land brings about a degradation of surface water quality which in turn affects fish, wildlife, and recreational activities in varying degrees. It indirectly reduces its effectiveness as a land use for filtering out and absorbing suspended solids and their associated pollutants. This is because the velocity of runoff is not lowered, thereby preventing suspended solids and their associated pollutants from being dropped out. 3/ Forest land clearing also brings about the drainage of wetlands, which is a problem in the watershed.

Turbid water is limiting the fisheries in some of the bayous and ponded water channels. This problem is a result of the erosion of fine textured soils on intensively-farmed drainage areas.

Water quality of the bayous, channels, and canals is illustrated by the chart on page II-47, and is interpreted according to the parameters in appendix G.

#### Economic and Social Problems

The level of income necessary for surviving on a minimum diet with none of the amenities of prosperity has been determined by the Social Security Administration  $_{\bullet}4/$  An individual is considered

<sup>3/</sup> Ruth Patrick, The Effects of Channelization on Aquatic Life of Streams, the Academy of Natural Sciences of Philadelphia, p. 2.

<sup>4/</sup> James R. Bobo and Dean A. Dudley, <u>Statistical Abstract of Louisiana</u>, 4th ed. (New Orleans: Division of Business and Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971 p. 172.

WATER QUALITY DATA<sup>a/</sup>
Bayou Grosse Tete Watershed

PARAMETERS	Date of Sampling	Bayou Grosse Tete <sup>b</sup>	Discharge Bayouc/
Color (Units)	2-18-75	50	60
	3-24-75 4-22-75	58 30	70 40
	5-14-75	25	80
	6-12-75	50	38
	6-25-75 8-26-75	5 25	17 20
Average		35	46
lardness as CaCO <sub>3</sub>	2-18-75	120	62
	3-24-75 4-22-75	192 150	92 118
	5-14-75	126	92
	6-12-75	110	56
	6-25-75 8-26-75	152 110	150 92
lverage	8-20-73	137	95
Nitrogen Ammonia (ppm) (N)	2-18-75	0.20	0.60
	3-24-75	.60	• 90
	4-22-75 5-14-75	.10	.25 .55
	6-12-75	. 38	. 90
	6-25-75	.25	. 38
lverage	8-28-75	.49	.18 .50
itrogen Nitrate (ppm) (N)	2-18-75	0.70	0.80
	3-24-75	.40	.40
	4-22-75	.40	.15 .10
	5-14-75 6-12-75	.10 .35	.65
	6-25-75	.40	.15
	8-26-75	. 15 . 36	.05
Average Oxygen (ppm)	2-18-75	6.0	6.0
// " \FF=/	3-24-75	6.0	7.0
	4-22-75	9, 0	7.0
	5-14-75 6-12 <b>-</b> 75	7.0 6.0	9.0 4.0
	6-25-75	9.0	7.0
	8-26-75	5.0	8.0
verage oR ('Inits)	2-18-75	6.9 7.5	6.9
( /!!![2)	3-24-75	8.0	6.8
	4-22-75	8.5	7.5
	5-14-75 6-12-75	8. 0 7. 7	7.7 6.7
	6-25-75	8.8	7.7
	8-26-75	8.0	8.5
Average	2 10 77	8.0	7.3
Phosphate Ortho (ppm) (PO <sub>4</sub> )	2-18-75 3-24-75	0.36 1.15	0.38
	4-22-75	.30	.10
	5-14-75	.38	.45
	6-12-75 6-25-75	.58 .18	.45
	8-26-75	.42	.26
verage		.48	. 37
211-1 (CO.)	2 10 75	13	16
Sulphate (ppm) (SO <sub>4</sub> )	2-18-75 3-24-75	24	24
	4-22-75	15	14
	5-14-75	15 16	7
	6-12-75 6-25-75	16 14	16 11
	8-26-75	14	5
lverage		16	13
Gulfide (ppm) (S)	2-18-75	0.01 0	0.0
	3-24-75 4-22-75	.02	.02 0
	5-14-75	0	.01
	6-12-75	0	0
	6-25-75 8-26-75	0	0
verage		Ö	ő
uspended Solids (ppm)	2-18-75	40	125
	3-24-75	55	30
	4-22-75 5-14-75	20 45	30 15
	6-12-75	80	105
	6-25-75	22	10
waraga	8-26-75	30 42	5 46
Average Cemperature (°F)	2-18-75	62	68
	3-24-75	70	72
	4-22-75	73	72 79
	5-14-75 6-12-75	77 82	81
	6-25-75	86	86
	8-26-75	79	84
Average	2-18-75	76 80	77 230
furbidity (fTU)	3-24-75	85	120
	4-22-75	38	70
	5-14-75	58	60
	6-12-75 6-25-75	125 45	185 38
	8-26-75	60	25
		70	104

 $<sup>\</sup>underline{\underline{a}}/$  Developed by the Soil Conservation Service.

 $<sup>\</sup>underline{b}$ / One mile north of Livonia

 $<sup>\</sup>underline{\mathbf{c}}/$  At point where it empties into False River

poor if his personal income or the income of his family inadequately provides for his subsistence. In 1960, 56 percent of all families in Pointe Coupee Parish were classified as poor. In 1966, 45 percent were classified as poor. This was an improvement of 11 percent from 1960. Approximately 0.5 percent of all families in Louisiana live in Pointe Coupee Parish. About 1 percent of all poor families in the State reside in the parish.

The 1970 Census indicates that Pointe Coupee Parish had 5,119 families with a median income of \$4,957. Of the total families, 939 were urban with a median income of \$4,422; 3,029 were rural nonfarm with a median income of \$4,442; and 1,151 were rural farm with a median income of \$5,627. Approximately 40 percent of the urban families had incomes less than the poverty level. Also, 40 percent of the rural nonfarm families and 28 percent of the rural farm families had incomes less than the poverty level.

Most of Pointe Coupee Parish's economic conditions are below the State averages. Compared to State averages, the parish had 35 percent more primary individuals who are 65 years of age and over, 114 percent more occupied households which averaged 1.51 or more persons per room, and 177 percent more occupied households lacking complete plumbing facilities.5/

Old age assistance and aid to dependent children are the two largest recipient groups of welfare aid in Pointe Coupee Parish. Of the total public welfare assistance grants made in fiscal year 1968 through 1969 in the parish, 59 percent were for old age assistance, 30 percent were for aid to dependent children, 8 percent were for disability assistance, 2 percent were for general assistance, and 1 percent was for aid to the needy blind. Approximately 40 percent of the parish's population were under 18 years old, and 10 percent were 65 years and over.6/ Information from the 1970 census reveals that 8 percent of the people over 25 years old had never completed 1 year of school, and 26 percent were high school graduates. The preceding statistics for the parish are considered to be representative of the watershed.

A trend of increasing farm sizes and decreasing numbers is continuing in the parish. According to 1969 Census of Agriculture data, Pointe Coupee Parish had 811 farms, or 28 percent less

<sup>5/</sup> Fred M. Wrighton and Barbara H. Denton, "Population and Housing Correlates of Poverty in Louisiana, 1970" The Louisiana Economy (Ruston: College of Business Administration, Division of Business and Economic Research, Louisiana Tech University, 1971), Vol. IV, No. 2, (May 1971), pp. 1-7.

<sup>6/</sup> Bobo, op cit. pp. 172.

than in 1964. The average farm size in the parish increased from 212 acres in 1964 to 282 acres in 1969. Small farm operators have found it difficult to continue providing for their families on small acreages. Some have been forced to either quit farming, expand their acreages, or supplement their incomes with other work. Many of the small farmers have either sold or rented their land. The majority of the remaining small farm operators are employed off the farm and are not primarily dependent on the farm for their livelihood.

With regard to the minority population in Pointe Coupee Parish, about 67 percent of those below the poverty level are of minority races.

The rural minority population is about 9,100. Approximately 20 percent are unemployed. Of those who are employed about 3 percent are self-employed as farmers and 12 percent are agricultural laborers.

The median income for those minorities in agriculture is about \$1,900 per family. This compares to the median family income of \$3,273 for the minority population of the parish as a whole and which in turn is \$1,784 less than the median family income for the parish.

These minority conditions apply similarly to the watershed.

According to the 1969 Census of Agriculture data for Pointe Coupee Parish, about 660 farms, or 81 percent of the farms in the parish, had sales of less than \$10,000. Of this number, approximately 21 percent had sales of between \$2,500 and \$5,000, and 64 percent had sales of less than \$2,500. Farmers, in trying to raise their income, have attempted to increase production or farm more land, which usually requires increased investments in land, labor, and machinery. When they are limited in this attempt, the farm often becomes an uneconomical unit which forces them out of business.

The population of Pointe Coupee Parish decreased 486 from 1960 to 1970. The net out-migration was 3,767 for the parish. This was a 15-percent decrease in the expected 1970 population. 7/Many of the young adults are leaving the farm to seek employment elsewhere. These conditions are representative of the watershed. This is a reflection of local conditions of migration out of the watershed to areas providing employment opportunities, and is contradictory to the net effects of OBERS projections for the Lake Maurepas Subregion as a whole.

<sup>7/</sup> Fred M. Wrighton and Barbara H. Denton, "Net Migration in Louisiana," The Louisiana Economy (Ruston: College of Business Administration, Division of Business and Economic Research, Louisiana Tech University, 1971), Vol. V, No. 1, (August 1971), pp. 1-3.

## RELATIONSHIP TO LAND USE POLICIES AND CONTROLS

This project conforms to the policies for the conservation and management of land and water resources while at the same time increasing the production of food and fiber. It is to be carried out in a manner compatible with the policies for preserving and enhancing the environment.

This project does not include the drainage of any wetlands. However, 24 acres of Type 1 wetland will be utilized for channel rights-of-way which will affect only the vegetative community and will not affect the water level. There are no Type 2 wetlands in the watershed.

This project is also consistent with the Federal Water Pollution Control Act Amendments of 1972. Land treatment affords protection to the watershed by reducing erosion and providing a certain amount of natural filtration.



#### ENVIRONMENTAL IMPACTS

#### Conservation Land Treatment

The land treatment program will increase crop production and improve soil cover. As a result, erosion and sediment will be reduced thus improving water quality. These land treatment measures will not only improve the agricultural productivity of the watershed but will also enhance the aquatic and upland wildlife habitat.

Conservation cropping systems will improve or maintain good physical soil conditions and protect the soil. Rotations that include legumes will also improve soil fertility and subsequently increase crop yields. Depending upon rotation and vegetation, these systems also benefit wildlife by increasing habitat diversity, providing additional food and cover, and improving water quality.

Use of residues from these crops will provide cover on the soil surface during winter months when it would be otherwise unprotected. Crop residue management will also increase food and cover available to open land wildlife species during the time when these essentials are in shortest supply, winter and early spring. Reductions in erosion associated with this practice will improve water quality and improve fish and wildlife habitat.

Pastureland and hayland practices will improve forage yields resulting in increased beef production and soil cover.

The installation of adequate drainage outlets will allow for 50,200 acres of cropland and pastureland to be adequately treated. The remaining 27,876 acres will have some conservation measures installed during the remaining project period.

Woodland improvement by the removal of low value overstory species will stimulate the growth of understory and ground cover vegetation thereby increasing the available food and cover to most forest wildlife species, both game and nongame. The remaining better quality overstory species will produce more and better quality mast for wildlife food due to less competition from low quality overstory species for water, plant nutrients, and sunlight.

#### Structural Measures

Flood Prevention and Drainage - The installation of the combined program of land treatment and structural measures will directly benefit about 54,600 acres of cropland and pastureland.

The remaining 16,700 acres of cropland and pastureland will not be directly affected by project channel work. Although benefits were not calculated on these acres, they will benefit from the accelerated installation of land treatment measures and by rotational systems allowable because of project effects in the benefited areas.

The area directly benefited contains approximately 8,700 acres of sugarcane, 5,600 acres of corn, 12,300 acres of soybeans, 1,000 acres of cotton, 500 acres of rice, and 26,500 acres of pasture. Average yields per acre could increase yields 19 percent for sugarcane, 21 percent for corn, 14 percent for soybeans, 19 percent for cotton, and 40 percent for pasture.

Land in forest should remain in forest, since only minor areas of forest are to be traversed or affected by project channels and these channels were not designed to provide the same level of protection as cropland.

Installation of project structural measures will stimulate application of conservation practices by increasing the effectiveness of these practices. They will protect agricultural resources and improve environmental features such as water quality. Land users and operators will construct and maintain adequate farm and group drainage facilities, which will allow project benefits to accrue.

An estimated 500 farmers will benefit directly from project structural measures and land treatment. An additional 200 farmers will benefit from land treatment only. All these measures will benefit 2,000 farm family members and farm employees. Other persons depending upon the agricultural economy for income will also benefit. Financial and technical assistance for installing project measures will introduce capital that will stimulate increased use of local goods, services, and labor. Maintenance of project measures will tend to sustain local employment.

Floodwater and drainage effects are discussed together because the problems are inseparable. Channels which remove floodwater also serve as drainage facilities.

Project measures will provide protection to agricultural land in the benefit area from a rainstorm which is expected to occur, on the average, once every 3 years. Runoff rates from the 3-year storm will exceed channel capacities, but the flooding duration will not exceed 24 hours. Flooding for this duration will not cause significant damages to crops and pastures. Larger storms will cause significant damages, but the damages will be less than they would be with present conditions.

Within the watershed, peak stages will be increased in some channels downstream from the channel work. These stage increases are shown for selected points in the tabulation on page II-54. There will be no change in peak stages downstream from the confluence of Channel M-7 and Bayou Grosse Tete and the confluence of Channel M-7 and the borrow pit. These two points represent the lowermost limits of the effects of the project measures on peak stages.

The project will not alter the volume of water entering False River. However, it is expected to affect the changes in peak stages for channels M-1 and M-2 immediately upstream from False River. These peak stages are indicated in the tabulation on page II-54.

No effects on the groundwater are anticipated due to project action. The increased rate of runoff due to channel construction will cause a slight decrease in the recharge of the aquifer. The channel work will also cause a slight increase in the permeability of the materail on the bottom of the channel. Some land treatment measures such as chiseling and subsoiling increase permeability. The unconfined aquifer is hydraulically connected to the Mississippi River and depending on the stage of the River is either influent of effluent.

The estimated reduction in agricultural flood damages brought about by the 3-year level of protection is 73 percent. Average annual crop and pasture damages from flooding will be reduced from \$725,600 to 193,500. In addition, farmers will be able to install on-farm drainage measures resulting in \$483,600 annually in benefits due to adequate outlets. Benefits resulting from more intensive use of cropland will amount to an average of \$107,500 annually.

Improved drainage will allow proper timing of cultural practices. Both planting and harvesting can be done efficiently at opportune dates. Large equipment can be used on the more level, better-drained fields. Timely planting will increase yields and allow efficient use of equipment and other factors of production. Improved drainage and flood protection will reduce the frequency of replantings and cultivations, and will allow effective application of land treatment measures.

Improved farming efficiency resulting from project installation will reduce the annual cost of soybean production about \$72,000. Reduced flooding, improved soil conditions, and better, more timely management practices will improve the quality of products marketed. The additional average annual total income received due to improved quality will be about 1 percent or \$15,000.

	Computed Stage Increase - Feet				
	3-Year	10-Year	100-Year		
Channel and Location	Storm a/	Storm a/	Storm a/		
L=4H @ Outlet	0	C	0		
L=4C @ Outlet	•1	0	0		
L=4B @ Outlet	•2	•1	•1		
L-4A @ Outletb/	0	0	0		
M=4 @ L=4Ab/	0	0	0		
M-1 @ Outlet	• 2	•1	•1		
M-2 @ Outlet	•1	•1	•1		
False River <u>b</u> /	0	0	0		
M-3 @ Outlet	• 2	•1	•1		
M-5 @ Outlet	• 2	•1	•1		
Bayou Grosse Tete @ M-5b/	0	0	0		
M-6 @ Outlet	0	0	0		
M-18 @ Outlet	0	0	0		
M-14 @ Outlet	0	0	0		
M-13 @ Outlet	•1	0	0		
M-12 @ Outlet	• 2	•1	•1		
Borrow Pit @ M-12	•1	0	0		
M-11 @ Outlet	0	С	0		
M-10 @ Outlet	•1	0	0		
M-9 @ Outlet	•1	0	0		
Borrow Pit @ M-9	•1	0	0		
M-8 @ Outlet	0	0	0		
M-7 @ Outlet	0	0	0		
Borrow Pit @ M-7	0	0	0		

a/ Storms with average recurrence of 3, 10, and 100 years, respectively.

Future land use in the watershed under "without project" and "with project" conditions is expected to be as follows:

FUTURE WITHOUT

rcent	Acres	Percent
33	46,276	34
22	30,800	22
34	45,343	33
11	14,581	11
100	137,000	100
	33 22 34 11	33 46,276 22 30,800 34 45,343 11 14,581

a/ Includes roads, channels, bayous, lakes, communities, farmsteads.

FUTURE WITH

 $<sup>\</sup>underline{b}$ / Temporary ponding attentuates the effect on peak stages.

The majority of disturbed open land will revert to its present use. Forest land will be reduced by approximately 157 acres. "Other" land use will be increased by about 81 acres. This increase represents the area required by the channels. Overall, 432 acres of additional land will be utilized by the project for channel rights-of-way. Land use changes for channel rights-of-way according to wildlife habitat types as a result of the project are as follows:

	FUTURE WITHOUT PROJECT	FUTURE WITH PROJECT
Land Use	Acreage in Channel Rights-of-Way	Acreage in Channel Rights-of-Way
Open Land Forest Land Wooded Channel Banks	122 558 <u>233</u>	267 715 <u>363</u>
Total	913	1,345

The preceding tabulation reflects permanent land use changes from one category to another. About 1,143 acres of land will be disturbed during the installation of channel work, including 712 acres presently occupied by channel rights-of-way.

The acceleration of the installation of land treatment measures will result in a reduction of 68,000 tons of erosion per year. This is computed on the basis of land use changes that are expected to occur during the "Future Without Project" as compared with reductions resulting from measures installed for the "Future With Project." The following chart summates the present and projected amounts of sheet erosion.

#### Present and Projected Amounts of Sheet Erosion

Unit	Present	Future W/O Project	Future With Project
tons/year	266,000	328,000	260,000
tons/acre/year	1.9	2.4	1.9

No monetary damages due to erosion have been computed.

With the project, sediment will be reduced to 82,000 tons per year. Of this amount, 28,000 tons per year will be deposited in False River and 54,000 tons per year will be carried to the watershed boundary.

The following chart summates the present and projected amounts of sediment yield.

#### PRESENT AND PROJECTED SEDIMENT YIELD

UNIT	PRES	ENT		WITHOUT JECT		RE WITH OJECT
	False River	Boundary	False River	Boundary	False River	Boundary
tons/year tons/acre/year	24 <b>,</b> 000	59,000	42,000	62,000 .2 .6	28,000	54 <b>,</b> 000 8 •5

Erosion induced by construction will amount to 17,784 tons. Sediment derived from this erosion will be deposited in False River, project channels, and outside the watershed. False River will receive 2,837 tons of this construction induced sediment and 8,320 tons will be delivered outside the watershed boundaries.

During the 10-year installation period, the total sediment yield will be reduced 110,000 tons. This reduction nets out the increased sediment yield derived from construction.

Aesthetic resources along channel banks will be affected where construction occurs. Natural beauty within the project area will be enhanced and maintained by the planting of hardwood seedlings on some spoil areas, the shaping and vegetation on other spoil areas, performing work from one side to preserve existing conditions as much as possible, clearing debris from channel areas, preserving selected trees within channel rights—of—way, and conforming to present alignments to the greatest extent possible. Removal of any natural vegetation during construction will temporarily create an undesirable appearance in the area of construction. Removal of any natural vegetation during construction will also temporarily expose bare surfaces of earth.

The fishery resource and other aquatic organisms will be adversely affected by the modification of 115 miles of project channels. These effects will be the results of temporary increases in turbidity, suspended solids, and sedimentation. There will also be, in some cases, an increase in the concentrations of plant nutrients in downstream water areas due to the disturbance of bottom sediments during construction.

False River will be affected by temporary increases in turbidities, suspended solids, sedimentation, and possibly plant

nutrients during the construction phase of the planned project which will require less than one year each for the M-1 and M-2 systems. Average concentrations of suspended sediment for False River during the construction period of channels that outlet into the lake will be increased by an estimated 3 mg/1. Sediment concentrations within these fan areas at the outlets will vary widely as to the exact size, location, and duration due to natural phenomena.

The rates and concentrations of sediment, turbidity, and also associated agri-chemicals entering the lake during the project installation period will be dependent upon the disturbance caused by construction, season, rainfall occurrence, and intensity; surface conditions; status of installation of land treatment measures; and time required for disturbed areas to revegetate.

Damages to fisheries and water quality of False River during project installation will be temporary and the magnitude held to a minimum due to the installation of land treatment measures and special construction features. (See <a href="PLANNED PROJECT">PLANNED PROJECT</a> section.) These damages that will occur include a slight lowering of localized water quality and biological productivity during construction in the general area where the two project channels outlet into the lake.

However, should the installation of land treatment measures lag and untimely high direct precipitation occur during periods of maximum exposed land surfaces, increased concentrations of sediment could be removed from fields. Temporary increases in False River near the outlet section of channels during these conditions could result in the lowering of standing crops of fisheries of about 12 percent based on estimates developed by the Louisiana Wild Life and Fisheries Commission.

The overall net effect of the installation of planned land treatment measures will result in a reduction in suspended sediment, turbidity, sedimentation, and plant nutrient concentrations. This will result in an improvement of the water quality entering False River over future conditions that are expected to occur without project.

Borrow pits from which material was obtained for the Morganza Floodway Levee that serves as the western boundary of the watershed, function as an outlet for intercepted drainage. A moderate fishery of about 150 acres in the lower 12 miles of these pits is now in existence. This habitat will be adversely affected by the project. The adverse effects will include a temporary increase in turbidity, suspended solids, and sedimentation. Due to existing water quality and present species composition of fish populations,

standing crop value will be reduced. Game fish species compositions will be reduced until present water quality and habitat conditions return. These reduction estimates are based on the last few hundred feet of channels draining into the borrow pits not requiring modification.

Four miles of project channels containing ponded water will be modified. The stability and diversity of the existing aquatic ecosystem will be temporarily disrupted in these ponded water areas because of the removal of bank and in-channel cover, and increases in suspended solids, turbidity, and sedimentation. This will lower the biological productivity and game fish composition of these areas. Recovery of stability, diversity, and productivity will begin when construction ceases. Complete recovery will occur when habitat conditions and water quality return to preproject conditions. Also, aquatic life and water quality in approximately 8 miles of ponded water will be temporarily affected by increases in suspended solids, turbidity, and sedimentation as a result of construction upstream. Effects on these ponded water areas will be very similar to those already discussed for the borrow pits.

The project measures planned in the vicinity of Portage Swamp will not affect the natural water levels or discharge from the area.

Effects to aquatic organisms, habitat, and water quality in the 4 miles of intermittent channels requiring work will be similar to those described for the ponded water sections. Because of the intermittent flow conditions, greater percentage of existing species that will tolerate low quality habitat, and faster habitat recovery rate, effects to these aquatic systems will be smaller and will recover more quickly than those described above for ponded water.

Approximately 107 miles of ephemeral channels will be altered as a result of the project. This alteration will cause temporary increases in turbidity, suspended solids, and sedimentation in downstream areas during and shortly after construction. The effects of these increases have already been discussed. Fish populations in these channels are insignificant or nonexistent due to the ephemeral flow. These channels are areas of production of lower food chain organisms such as insects and their larva, amphibians, and crustaceans. The effect of project construction will temporarily reduce the value of these areas for this purpose. The value of these channels for the above mentioned use will return as the habitat recovers to the preproject conditions.

Turbidity and sedimentation will be temporarily increased in Bayou Grosse Tete downstream from the project during construction. These increases will be temporary and will return to pre-construction levels when the construction phase of the project is completed and disturbed areas are revegetated. Even though downstream water quality will be temporarily lowered, experience and observations indicate that the existing organisms such as carp, shad, catfish, white crappie, and bowfin can tolerate the periodic lowering of water quality. Neither the diversity nor the standing crop should be affected.

Even though individual channels will experience temporary increases in turbidity and suspended sediment during construction, the net project effect over the entire watershed will be a decrease in their concentrations.

The use of agrichemicals is anticipated to increase slightly due to project installation. However, increased use of needed land treatment practices as a result of the accelerated land treatment phase of the project will reduce erosion, sedimentation, and runoff rates. Studies 1/ have shown that "Following application, pesticide loss from agricultural lands occurs through surface runoff, sediment loss, volatilization, organisms (plant and animal) uptake, and degradation (microbial, photochemical, chemical). The relative significance of the various mechanisms is highly dependent on environmental conditions and pesticide properties."

Movement of pesticides to a water course is of primary environmental concern because of possible effects on the aquatic ecology. Other than direct application, surface runoff and sediment transport have been recognized as the major routes to the aquatic environment. 2/

In light of these studies, the project should reduce the transport of agricultural chemicals to aquatic systems. In addition, the correct application at the proper time and proper rates can have a significant influence on the amount of agrichemicals that enter the natural environment.

Forest wildlife species will be adversely affected by the loss of 157 acres of bottom land hardwood required for additional channel rights-of-way.

<sup>1/</sup> U.S. Environmental Protection Agency, Office of Research and Development, Pesticide Transport And Runoff Model For Agricultural Lands, Environmental Protection Technology Series, EPA-660/2-74-013, December 1973.

<sup>&</sup>lt;u>2</u>/ Ibid.

The overall effects to game animal populations due to all direct habitat changes and losses as a result of project action are presented in the tabulation on page II-61. This tabulation is based on losses or gains in habitat units as a direct result of project installation for each game animal occurring in the project area. 3/ The loss or gain of one habitat unit is shown as the loss or gain of one animal for the life of the project unless noted as temporary. Habitat changes or losses will also affect nongame animals and furbearers. Effects to these animals can be determined in the same way as those for game animals, but due to the large number of different animals and habitat requirements for these animals, no attempt is made to include them in this table. However, effects to a given animal due to project action can be determined by using the changes in major habitat types given in the tabulation on page II-61.

Recovery of the disturbed forested areas will require about 20 years if further disturbances do not occur in the interim. This recovery will be accelerated by planting 150 acres of the spoil to native hardwood seedlings.

Open land wildlife species will be benefited by the creation of 340 acres of additional habitat as a result of open land created in berm and spoil areas. These gains will be temporary, occurring only in the early stages of plant succession. Wildlife now utilizing the existing 1,345 acres of rights-of-way to be disturbed will be temporarily displaced due to channel improvement. Adapted wildlife species will return to these areas after construction ceases and vegetation is reestablished.

A minor loss of habitat for "endangered" wildlife species will occur. The impacts of this loss to any "endangered" wildlife species will be minimal. However, the cumulative impact of this project and other similar projects is further depleting habitat for these animals.

Temporary increases in turbidity, suspended solids, and sedimentation will occur in about 110 acres (15 percent of total in watershed) of Type 5 wetlands. About 24 acres (0.3 percent of total in watershed) of Type 1 wetlands will be lost because of clearing of existing vegetation along the lower end of the channel rights-of-way of channel L-4-A in these wetland areas. Spoil placement will hinder the complete recovery of these areas to pre-project conditions because of increases in elevations.

<sup>3/</sup> A habitat unit is the total number of acres of existing habitat type (s) required to sustain one animal of a given species.

IMPACTS

HABITAT CHANGES AND NUMBERS OF GAME ANIMALS GAINED OR LOST DUE TO PROJECT CONSTRUCTION FOR BAYOU GROSSE TETE WATERSHED

Consider	Habitat	Acres Gained+	Number of Animals Gained+
Species	Туре	Lost-	<u>Lost-a</u> /
Black Bear	Forest Landc/	-360	<u>b</u> /
Deer	Forest Land	<b>-</b> 360	- 18
Dove <u>d</u> /	Open Land	+340	+113
Quail <u>d</u> /	Open Land	+340	+ 17
Rabbit	Open Land & Forest Land	+340 -360	- 2
Squirrel	Forest Land	-360	-180
Waterfowl (resident)	Forest Land & Water Areas	<b>-</b> 360 0	- 5
Waterfowl (migratory)	Forest Land Open Land & Water Areas	-360 +340 0	- 10
Wild Turkey	Forest Land	-360	0
Woodcock	Forest Land & Open Land	-360 +340	- 2

a/ Based on present carrying capacity of the habitat.

b/ Population data not available.

c/ All forest land figures include woody channel banks.

 $<sup>\</sup>underline{d}$ / Temporary increases.

The installation of the project measures will not affect any archaeological, historical or cultural sites. This includes in particular the LeJeune House and Wurtelle Memorial which have been nominated for inclusion in the National Register. Parlange Plantation House which is the only historic site listed in the National Register of Historic Places for Pointe Coupee Parish will not be affected by the project.

This was determined under a contract with the Curator of the Department of Geography and Anthropology of the Louisiana State University who conducted archival research followed by a field survey. The University conducted the archival research in cooperation with the Louisiana Department of Art, Historical and Cultural Preservation.

Efforts will be made to avoid creating conditions which will increase populations of vectors which affect public health conditions. Prevention and control measures will be implemented, if needed, in cooperation with appropriate Federal, State, and local health agencies. These measures will suppress the proliferation of vectors such as mosquitoes that could occur with the installation of the project.

# Economic and Social

This project will enhance the economic base of the watershed which is primarily agriculture and its related sectors. It is anticipated that gross income will be increased by approximately \$1,600,000.

A study4/ of economic interrelationships in a rural community indicates that this additional income would be distributed principally among the sectors of agricultural services, agricultural supply, finance, gas and oil supplies, automotive, and retail and wholesale. The amounts are according to the tabulation on the following page.

It is estimated that installation of the project should create about 46 man-years of local labor for a 6-year period. Operation and maintenance will provide 50 man-years of local labor over the project life (50 years).

<sup>4/ &</sup>quot;Economic Interrelationships In A Rural Community In Louisiana, West Carroll Parish," Thomas A. Klindt and L. J. Guedry, Department of Agricultural Economics and Agribusiness, Louisiana State University.

Sector	Percent	Amount
Agricultural Services Agricultural Supplies Gas and Oil Supplies Automotive Finance Othera/	0.4 61.0 12.2 3.3 6.9 16.2	6,400 976,000 195,200 52,800 110,400 259,200
Total	100.0	1,600,000

a/ Includes construction, government, and various other minor sectors.

The project should slow the trend of decreasing number of farms and increasing size of farms. With the project, optimum-sized labor saving equipment would be used more efficiently on the farms. This and other factors should decrease production costs and increase yields, thus making farming more profitable. It would also make farming more competitive for labor with other industries, thereby slowing the out-migration trend and provide employment opportunities for minority workers.

The project will directly benefit approximately 700 farmers and their families of which about 6 percent are of the minority population. It is estimated 500 of these farmers will benefit from both structural measures and land treatment and the remaining 200 will benefit from accelerated land treatment.

The average annual net farm income is estimated to increase about \$2,000 per farm. With this increase, farm income should tend to be more stable. The additional income will enable farm families to improve their standards of living including better health care and in general, enhance their social well-being. It is estimated that the income of approximately 2 percent of the farm families in minority groups and whose farms would be directly benefited by the project would have an opportunity to raise their income to a level above the poverty level.

Local secondary benefits will accrue after the installation of project measures. The value added to the immediate products and services as a result of activities stemming from or induced by the project will enhance the overall local economy. The increased production of goods stemming from the project will stimulate economic activity in the processing, transporting, and marketing industries within the area. Processors, business establishments, and other individuals not directly benefited will profit from increased sales of agricultural associated goods and products. Suppliers of needed materials and services required to make possible the benefits expected from installation of the project

will also realize increased income. Overall, the increased production of goods and services induced by the project will stimulate local and regional economic activity.

# International Impacts

This discussion of international impacts is in reference to those problems identified previously which are affecting the production of food and fiber in this watershed.

The world demand for sugar continues to increase as population, incomes, and living standards improve in developed and developing countries. However, world sugar output has not kept pace with demand.

This watershed project will assist farmers in obtaining higher yields, which will add incremental amounts to the total tonnage of sugarcane available from which sugar can be processed. Every additional ton of sugar that is processed will add to the world supply by an equivalent amount.

In 1973, the total United States sugar consumption was about 12,000,000 tons or 102.38 pounds per capita. Of this amount, about 53 percent (6,360,000 tons) was domestically produced and 47 percent (5,640,000 tons) was supplied by foreign producers. With this type of situation, it would be advantageous to the United States to increase its own sugar production. This would serve to reduce imports, and place less dependence on foreign producers.

Sugarcane production is particularly critical in this watershed. It is part of Louisiana's sugarcane production of 558,000 tons for 1973, for example, which represented 38 percent of the sugarcane grown in the United States that year. This crop is unique to the United States mainland because it is produced only in Florida, Louisiana, and Texas where there is the right combination of soil and climate.

# Favorable Environmental Impacts

Economic conditions in the watershed will be enhanced by the project.

Floodwater damage reduction and improved drainage will lower agricultural production costs, bring about increases in crop yields, and result in higher quality crops.

Average annual farm income will be increased.

Installation of the project will create about 96 man-years of employment throughout the project period.

Approximately 700 farm families will be benefited economically and socially.

The project will be conducive to slowing the trend toward fewer farms and more acreage per farm.

Overbank flow of channels will be reduced approximately 73 percent thereby reducing flood damages accordingly.

Approximately 54,600 acres of cropland and pastureland will benefit from land treatment and structural measures and an additional 16,700 acres will benefit from land treatment measures only.

Erosion and the resulting suspended sediment and sedimentation will be less with the project than it would be without the project.

Sheet erosion will be reduced from approximately 328,000 tons per year to approximately 260,000 tons per year.

Sediment that would have been delivered to False River by 1985 under future conditions without project will be reduced 33 percent.

Harmful agricultural chemicals delivered to downstream waters should decrease due to a decrease in suspended solids and sedimentation.

Access to project channels will be improved.

There will be temporary increases of openland habitat.

Vector populations will be suppressed.

By reducing sediment, erosion, and runoff, agricultural chemicals released to the environment will in turn be diminished.

The estimated 2 percent of farm families of minority groups whose income is below the poverty level will have the opportunity to increase their income to a level above the poverty level.

The project will indirectly afford employment opportunities for workers in minority groups.

#### Adverse Environmental Effects

Construction will cause approximately 2,837 tons of sediment to be delivered to False River during the 6-year installation period.

Areas disturbed during construction will result in some reductions of both game and nongame animals.

Removal of existing potholes, in-channel cover, and cover on one bank as part of the construction process will cause a degradation of habitat for aquatic and semiaquatic wildlife.

Temporary reductions in the biological productivity of the aquatic ecosystems will occur because of channel enlargements, clearings, and temporary lowering of water quality.

There will be a minor loss of potential habitat for "endangered" wildlife species due to project installation.

Eight miles of ponded water will be affected as a result of upstream construction.

Loss of 157 acres of bottom land hardwoods will reduce forest land species of wildlife.

Temporary increases in turbidity and suspended solids will occur downstream in Bayou Grosse Tete proper as a result of construction.

Aesthetic values will be temporarily reduced in areas of construction.

#### **ALTERNATIVES**

#### Land Treatment Only

The major land treatment measures that would be installed under this alternative are conservation cropping systems, crop residue management, land smoothing, drainage mains and laterals, drainage field ditches, pasture and hayland management, pasture and hayland planting, wildlife wetland habitat management, and wildlife upland habitat management. These measures would adequately treat about 27,000 acres that have little or no damage from flooding and inadequate drainage.

The total installation cost would be approximately \$1,348,900. An additional 49,900 acres would have some land treatment measures installed, but their effectiveness would be restricted because of inadequate protection and drainage outlets.

The selection of land treatment measures is dependent on the soils and the planned crops. Soils that have a wetness problem and are used for row crops, such as cotton and soybeans, require the timely removal of surface water and the improvement of internal drainage. These soils normally have slow permeability that severely restricts percolation and lateral movement of water in the root zone. Drainage field ditches, drainage mains and laterals, and land smoothing or land leveling would accomplish the timely removal of surface water only if adequate outlets existed. These measures combined with crop residue management and conservation cropping systems would improve the tilth of the soils and increase the - movement of air and water within the soils. However, a complete program that would provide adequate outlets for on-farm drainage systems would be required for maximum benefits of any land treatment measures.

The enhancement of wildlife habitat under this alternative would also enhance the recreational resources by providing improved hunting.

This alternative would not provide for adequate outlets, and the installation of land treatment only would not achieve the intended goals and purposes of this project.

# Land Use More Tolerant to Wet Soil Conditions

Most of the soils in this watershed are slowly permeable and possess a high water-holding capacity. In addition, the topography is nearly level, which causes the surface discharge of water to be very slow. Land use without structural measures that would be tolerant of wet soil conditions could include forest land, pasture-land, and some amount of fish farming.

Based on soil types, 10,000 acres of cropland could be converted to forest land and approximately 28,000 acres could be converted to pastureland.

It is estimated that this conversion of land would cost \$2,200,000. Net returns for the watershed would be reduced approximately \$2,300,000 annually. In terms of agricultural production, this would be an estimated annual reduction of 420,000 bushels of soybeans, 230,000 bushels of corn, 600 bales of cotton, and 300,000 tons of sugarcane. There would be a corresponding increase of about 30,000 hundredweight of beef due to increased pasture acreage.

Crawfish production in rotation with rice could be introduced, but due to the small acreage of rice grown in this watershed, crawfish production would be limited unless rice production increased considerably.

No fish farming exists in the area, but there is a potential for development under present drainage conditions.

Upland wildlife habitat could be developed on a scattered basis by individual land users throughout the watershed. This would enhance recreation by providing additional land for hunting.

This alternative would induce an out-migration of people as well as bring about a significant reduction in the output of agricultural products.

# Floodproofing and Land Treatment

Under this alternative, floodproofing would include leveed floodways to prevent headwater flooding and pumps to remove excessive rainfall from the protected areas. Channels would be required inside the leveed areas to deliver water to the pumps. The installation of this system would cost an estimated \$19,700,000 and its annual operation and maintenance would be about \$1,000,000.

The land treatment program would include conservation measures to adequately treat 77,240 acres at a cost of \$3,858,800. The conservation measures needed to treat this area would include, but

would not be limited to, conservation cropping systems, crop residue management, land smoothing, drainage field ditches, drainage mains and laterals, pasture and hayland management, pasture and hayland planting, wildlife wetland habitat management, and wildlife upland habitat management. These measures would be installed singly or in combinations as needed. They would reduce runoff, improve water quality, and improve the tilth of the soils. Hunting as a form of recreation would also be enhanced.

The total estimated cost of developing this alternative would be \$24,858,800. It would require more land for rights-of-way than the selected alternative. In addition, the pumps would have a high noise level and excessive erosion and turbidity could occur at the points of discharge. This operation would be dependent on fuel or electric power. If one or the other were not available at a time when the pumps were critically needed, very serious flooding problems would occur. The use of pumps would also add to the energy problem.

This alternative would cost approximately \$16,840,600 more than the selected alternative and would produce about the same level of benefits.

# Channel Work and Land Treatment

Various sizes and lengths of channels were studied under this alternative to determine if a 1-, 3-, or 5-year level of agricultural protection would provide the means for most nearly meeting the project purposes and goals.

The effects of each of these levels of protection were evaluated for without- and with-project conditions. The 3-year level of protection was selected as the basis for the project and is discussed in the <a href="ENVIRONMENTAL IMPACTS">ENVIRONMENTAL IMPACTS</a> section. The 1- and 5-year levels of protection are discussed in this section as other alternatives considered.

The land treatment measures to be installed for this alternative would be the same as those discussed under the <u>Floodproofing</u> and <u>Land Treatment</u> alternative. The total effects of land treatment would not be the same for the 1- and 5-year levels of protection; however, the downstream limitation of the 1-year level of protection would reduce the effectiveness of the land treatment program, the amount of land that could be adequately treated, and the amount of land disturbed.

Wildlife habitat changes and effects on animal populations were also studied. The results of this study are summarized in the tabulation on pages II-72 and II-74.

Recreation would be enhanced by this alternative in that favorable benefits to wildlife and fisheries would in turn provide some degree of improvement to hunting and fishing in the watershed.

There would be no significant difference in the effects of 1-, 3-, and 5-year levels of protection on the fishery resource. This is because there would be a proportionately small difference in the amount of channel disturbed, habitat loss, and degree and duration of water quality degradation. Effects of the selected alternative for a 3-year level of protection are discussed in the IMPACT section.

Smaller Channels - Providing a 1-year level of protection by channel work would require about 103 miles of channel work with 815,000 cubic yards of excavation. The total installation cost would be an estimated \$1,884,000. The annual cost, including operation and maintenance, would be \$179,000. Average annual flood prevention and drainage benefits would be approximately \$423,600. The damage reduction would be about 27 percent.

Additional land area would be required for channel enlargement, berms, and spoil areas. These increases are as follows:

- 1. Land within channels would increase 27 acres.
- 2. Land in berms would increase 133 acres.
- 3. Land in spoil would increase 205 acres.

The land treatment program under this level of protection would include the installation of the necessary conservation measures to adequately treat 30,600 acres. Some conservation measures would be installed on an aditional 48,400 acres of cropland and pastureland. The cost would be about \$1,520,700. The measures that would be installed include the same features discussed under <a href="#Floodproofing and Land Treatment">Floodproofing</a> and Land Treatment.

Type of habitat in which channels are located was categorized according to examples shown in <a href="ENVIRONMENTAL SETTING">ENVIRONMENTAL SETTING</a> - Plant and <a href="Animal Resources">Animal Resources</a>. Channels located on cropland or pastureland which had no trees or brush on the berms and spoil were categorized as "open land" channels. Channels located in cropland or pastureland having narrow strips of trees or brush on the berms and spoil were categorized as "wooded channel banks." Channels located in forests

were categorized as "forest." Land used for channels, berms, and spoil within these three categories would change by the following amounts:

- 1. Open land acres occupied would increase 123 acres.
- Wooded channel bank acres occupied would increase 110 acres.
- 3. Forest land acres occupied would increase 132 acres.

The increase in wooded channel bank acreage occupied would be a change in wildlife habitat because the berm and one side of the channel would be kept partially free of woody vegetation under the maintenance program. (See figure 5, page II-F-5, and figure 6, page II-F-6.) The acres of spoil disturbed in the wooded channel banks would be allowed to grow back into trees by natural plant succession.

The effect of this alternative on game animals is shown in the tabulation on the following page.

Larger Channels - Providing a 5-year level of protection would require about 117 miles of channel work with 1,560,000 cubic yards of excavation. The total installation cost would be \$3,604,000. The annual cost, including operation and maintenance, would be \$290,000. Average annual flood damage reduction and drainage benefits would be approximately \$1,295,000. This reduction would be about 83 percent. Additional land areas would be required for channel enlargement, berms, and spoil areas. These increses are as follows:

- 1. Land within channels would increase 33 acres.
- 2. Land used for berms would increase 162 acres.
- 3. Land used for spoil would increase 252 acres.

The land treatment program would include the installation of the necessary conservation measures to adequately treat 88,600 acres. In addition, 22,700 acres would have some conservation measures applied. The cost would be \$4,225,800. The measures which would be installed include the same features discussed under Floodproofing and Land Treatment alternatives.

Land used for channels, berms, and spoil within the three categories -- open land, wooded channel banks, and forest land -- would increase by the following amounts:

#### ONE-YEAR LEVEL

# HABITAT CHANGES AND NUMBERS OF GAME ANIMALS GAINED OR LOST DUE TO PROJECT CONSTRUCTION FOR BAYOU GROSSE TETE WATERSHED

		Acres	Number of Animals
		Gained +	Gained +
Species	Habitat Type	Lost -	Lost -
Black Bear <u>a</u> /	Forest Land <u>b</u> /	<b>-</b> 310	
Deer	Forest Land	-310	<b>-</b> 15
Dove <u>c</u> /	Open Land	+280	+ 93
Quail c/	Open Land	+280	+ 14
Rabbit	Open Land and	+280	
	Forest Land	<b>-</b> 310	<b>-</b> 3
Squirrel	Forest Land	<b>-</b> 310	<b>-1</b> 55
Waterfowl	Forest Land and	<b>-</b> 310	
(Resident)	Water Areas	0	<del>-</del> 4
Waterfow1	Forest Land,	<b>-</b> 310	
(Migratory)	Open Land, and	+280	<b>-</b> 2
-	Water Areas	0	
Wild Turkey	Forest Land	<b>-</b> 310	<b>-</b> 2
Woodcock	Forest Land and	<b>-</b> 310	
	Open Land	+280	<b>-</b> 3
	•		

a/ Population data not available.

- 1. Open land acres occupied would increase 150 acres.
- 2. Wooded channel banks acres occupied would increase 134 acres.
- 3. Forest acres occupied would increase 163 acres.

The increase in wooded channel banks acreage occupied would be a change in wildlife habitat because the channel and berm would be kept partially free of woody vegetation under the maintenance program; see figure 4, page II-F-4, and figure 5, page II-F-5. The acres of spoil disturbed in the wooded channel banks would be allowed to grow back into trees by natural plant succession. The effect of this alternative on game animals is shown in the tabulation on page II-110.

b/ All forest land figures include woody channel banks.

c/ Temporary increases.

#### No Project

The No Project alternative would include the current land treatment program. At present, 7 percent of the watershed has received adequate land treatment. With the No Project alternative, the current rate of installation of land treatment measures would remain about the same.

Water problem areas would continue to exist with this alternative. Because the Sponsors do not have sufficient funds to finance the installation of a complete channel system, only limited work on certain channels would be done. No orderly, planned procedure would be followed. Installation of appurtenant measures needed to control erosion and sediment would not be installed. This haphazard approach would result in damages to the vegetative communities and aquatic ecosystems. The pursuit of this alternative would result in little emphasis being placed on environmental values. If the project is not installed, net annual benefits of about \$1,268,200 would be foregone.

FIVE-YEAR LEVEL

HABITAT CHANGES AND NUMBERS OF GAME ANIMALS GAINED OR
LOST DUE TO PROJECT CONSTRUCTION FOR
BAYOU GROSSE TETE WATERSHED

		Acres Gained +	Number of Animals Gained +
Species	Habitat Type	Lost -	Lost -
Black Bear <u>a</u> /	Forest Landb/	-380	
Deer	Forest Land	-380	<b>-</b> 19
Dovec/	Open Land	+345	+115
Quail <u>c</u> /	Open Land	+345	+17
Rabbit	Open Land and Forest Land	+345 -380	-4
Squirrel	Forest Land	-380	-190
Waterfowl (Resident)	Forest Land and Water Areas	-380 0	<b>-</b> 5
Waterfowl (Migratory)	Forest Land, Open Land, and Water Areas	-380 +345 0	-2
Wild Turkey	Forest Land	-380	-2
Woodcock	Forest Land and Open Land	-380 +345	-4

<sup>&</sup>lt;u>a</u>/ Population data not available.

 $<sup>\</sup>underline{b}$ / All forest land figures include woody channel banks.

c/ Temporary increases.

# SHORT-TERM VS. LONG-TERM USE OF RESOURCES

The level of drainage and flood protection provided by the project will improve cropping conditions which will allow higher crop yields, elimination of unnecessary costs, and better quality products. These conditions will induce farmers to apply needed measures and practice better conservation. The increased application of land treatment measures will insure sustained production for future generations. Since the major land use is now agriculture, and is expected to be so in the future, the project is compatible with the long-term use of land. With the planned maintenance it will continue to be effective in conserving land and water resources after its designed 50-year life unless new crop varieties and farming methods are developed which would require a higher level of protection.

The project will reduce water quality in False River during and immediately after construction. On a long-term basis, water quality will be improved over "future-without-project conditions".

The Bayou Grosse Tete Watershed is in the Lake Maurepas Subregion of the Lower Mississippi Water Resource Region of the United States. This subregion includes four soil and water conservation districts and parts of two others.

About 24 percent of the land area in the Lake Maurepas Subregion is in some stage of development, planning, or requesting assistance under Public Law 566. Approximately 15 percent of the total land area in the Lower Mississippi Water Resource Region is covered by Public Law 566 projects which are either installed or approved for planning. The status of Public Law 566 projects can be observed in the tabulation on the following page.

STATUS OF PUBLIC LAW 566 PROJECTS

ns Total	res) (No.) (Acres)		820 34 3,647,680 ated 59 7,447,733	820a/93a/11,095,413		400 8 783,000	400 8 783,000
Project Applications Received	(No.) (Acres)		7 531,820 Not Tabulated	7a/ 531,820 $a/$		2 258,400	2 258,400
Projects Approved For Planning	(No.) (Acres)		2,819,270 6,946,689	9,765,959		480,800	480,800
Pr Ap For	(No.)		21 40	61		5	5
Projects Installed	(No.) (Acres)		296,590 501,044	797,634		43,800	43,800
Pro	(No.)		6 19	25	a l	П	П
İtem		Lower Mississippi Water Resource Region	Louisiana All Other States	Total	<u>Lake Maurepas Subregion</u> Resource Subregion	Louisiana	Total

Does not contain applications received for states other than Louisiana. a/

#### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Channels have to be maintained and kept clear of obstructions in order to function as planned. As a result, the 714 acres in project channels will be precluded from use for any other purpose for at least the life of the project. Grasses and forbs will be allowed to grow in the channels and on the berms.

Spoil areas in the forest land will be planted with hardwood seedlings. The use of berms and spoil areas in rights-of-way of project channels will be restricted to those uses that will not interfere with the functioning, operation, and maintenance of project works. The total monetary value which will be expended for project installation, including land treatment and structural measures, amounts to \$7,351,700. The expenditure of labor and capital needed for project installation is irreversible.



#### CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

#### General

At a meeting on December 8, 1964, the Pointe Coupee Parish Police Jury formally recognized the concerns of residents of the Bayou Grosse Tete Watershed to correct flood and drainage problems in the watershed. They further recognized that the required corrections were too major to be undertaken by local interests alone. Therefore, the Police Jury took action to cosponsor with the Upper Delta Soil and Water Conservation District, an application for Federal assistance in planning and carrying out works of improvement under the provisions of Public Law 566.

On the same date, the Upper Delta Soil and Water Conservation District considered the same expressed concerns and took action to cosponsor with the Pointe Coupee Parish Police Jury, an application for Federal assistance under Public Law 566.

Therefore, on this date of December 8, 1964, an official application was prepared and signed by both parties and submitted to the State Soil and Water Conservation Committee, who approved the application on December 22, 1964. On November 4, 1968, approval was granted to proceed with planning assistance for watershed protection and development for the Bayou Grosse Tete Watershed under Public Law 566. Cooperating agencies notified included:

Forest Service, USDA
National Park Service, USDI
Corps of Engineers, Department of the Army
Fish and Wildlife Service, USDI
Louisiana Department of Highways
Louisiana Department of Public Works
Louisiana Wild Life and Fisheries Commission

On August 12, 1969, the Sponsors, the Pointe Coupee Parish Police Jury and the Upper Delta Soil and Water Conservation District, held a meeting with the Soil Conservation Service and expressed their desire to proceed with the planning of the watershed. At the same time, the Sponsors appointed a committee to work with the Soil Conservation Service and other agencies in planning and carrying out the project.

On this basis, a work outline was prepared to guide the development of a watershed plan. This outline identified the responsibilities

of the Sponsors and each discipline of the Soil Conservation Service with assistance provided by the Fish and Wildlife Service, U.S. Department of the Interior; the Forest Service, U.S. Department of Agriculture; and the Wild Life and Fisheries Commission, Forestry Commission, and Department of Public Works, State of Louisiana.

At a meeting on August 26, 1969, each member was furnished a map with instructions to study the problems in his area, discuss them with area leaders, and subsequently list on the map the ditches that they felt would be needed.

This information from the various areas of the watershed was consolidated onto one map at a watershed committee meeting on October 28, 1969, and was approved by the Sponsors.

During the course of planning, an inspection trip was made jointly by representatives of the Soil Conservation Service, the U.S. Fish and Wildlife Service, and the Louisiana Wild Life and Fisheries Commission to determine the wildlife and fisheries values. The U.S. Fish and Wildlife Service and the Louisiana Wild Life and Fisheries Commission also made a cooperative study regarding fish and wildlife resources and possible project effects.

The U.S. Forest Service working with the Soil Conservation Service and the Louisiana Forestry Commission also made a study of forestry resources in the watershed and developed inputs for the watershed plan.

The U.S. Department of Transportation was consulted regarding an interstate highway that was to cross the watershed with a bridge over Bayou Grosse Tete proper. This was done to relate effects on fish, wildlife, waterfowl, public parks, historic sites, drainage, etc., in relation to developing a project plan under Public Law 566.

All owners of transmission pipelines traversing the watershed were consulted and collaborated with in regard to project channel locations.

Collaboration with the Louisiana Department of Public Works was carried out on a continuing basis throughout the planning process. This involved channel designs and locations.

Throughout the course of planning, project effects by all participating agencies remained a prime consideration. Coordination among all agencies was maintained to develop a unified plan.

A total of 11 meetings were held with the Sponsors throughout the planning period to advise them on the status of the plan, consult with them on their needs, and review proposals.

The Curator of Anthropology of the Louisiana State University was contracted to conduct an archaeological survey of the watershed to determine if any archaeological deposits would be affected by structural measures. The survey also included consultation with the Louisiana Department of Art, Historical and Cultural Preservation regarding the location of historical aid cultural sites in relation to the location of structural measures.

Federal, state, and local agencies, groups, organizations, and interested individuals were provided an opportunity through a public meeting and by mail to make comments and recommendations for consideration in the preparation of the draft of the watershed plan and environmental impact statement.

Notice of the public meeting was issued through local newspapers and the television and radio medium. Agencies and groups requested to comment on the draft watershed plan and environmental impact statement are as follows:

#### State of Louisiana

\*Department of Public Works

Department of Highways

Department of Agriculture

Department of Conservation

\*Wild Life and Fisheries Commission

\*Forestry Commission

Historical Preservation and Cultural Commission

State Parks and Recreation Commission

\*Stream Control Commission

Soil and Water Conservation Committee

Cooperative Extension Service

\*Commission on Intergovernmental Relations

Louisiana State University

Curator of Anthropology

Center For Agricultural Science and Rural Development

Marine Environmental Researchers

Geological Survey

Division of Public Health

Bureau of Environmental Health, Water, and Air Quality

Division of Natural Resources and Energy

Joint Legislative Committee on Environmental Quality

State Clearing House

State Planning Office

Office of the Attorney General

Governor's Council on Environmental Quality

Agricultural Stabilization and Conservation Committee

#### U.S. Government

Bureau of Outdoor Recreation (USDI)

\*Environmental Protection Agency

\*National Marine Fisheries
National Park Service (USDI)
Office of Equal Opportunity
Federal Power Commission

\*Advisory Council on Historic Preservation
Department of the Army

\*Department of Commerce

\*Department of Health, Education, and Welfare

\*Department of the Interior

\*Geological Survey (USDI)

\*Department of Transportation
Coast Guard (USDI)

#### Other

Louisiana Farm Bureau
Sierra Club, Delta Chapter
Louisiana Wildlife Federation
Louisiana Forestry Association
Orleans Audubon Society
Wildlife Management Institute
Izaak Walton League

<sup>\*</sup> Agencies who responded to request for comments.

# Discussion and Disposition of Each Comment on Draft Statement 1/

Each issue, comment, or suggestion for improvement is summarized and a response given on the following pages. A reproduction of each of the original letters of comment, appear in Appendix C.

# State of Louisiana - Commission on Intergovernmental Relations

Comment: We have reviewed the Draft Environmental Impact Statement for the Bayou Grosse Tete Watershed, Pointe Coupee Parish, with respect to agency impact and responsibility. As indicated on page II-3 of the summary, the list of state agencies requested to review and comment on the document is sufficient. However, please note that the Division of Natural Resources and Energy and the Attorney General wish to be removed from your list to receive future statements.

A copy of the Statement will be retained in our office and is available for public inspection, and a Notice of Availability will be published in our newsletter.

Response: None required.

#### State of Louisiana - Department of Public Works

Comment: As previously acknowledged in earlier correspondence, we find the project to be well planned and adequately covering needs of the watershed. The draft environmental impact statement appears to be comprehensive and well structured. We are pleased to endorse both the watershed plan and the draft environmental impact statement. We urge approval of this report by the necessary authorities at the earliest possible time.

Response: None required.

<sup>1/</sup> Page numbers stated in comments refer to December 1975 draft. Page numbers where stated in disposition of comments refer to final statement.

#### U.S. Department of Health, Education, and Welfare

Comment: Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U.S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational health and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse effects that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental laws and regulations.

We, therefore, have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Response: None required.

#### U.S. Department of Transportation - Federal Highway Administration

Comment: The statement indicates work with minor costs involved in modification or replacement of bridges and culverts on the State Highway System. Coordination with the Louisiana Department of Highways will be appropriate if the proposed activity is implemented.

Response: None required.

#### Geological Survey - U.S. Department of the Interior

Comment: Page II-34, paragraph 2. Other municipalities in the utilize ground water for domestic purposes.

Response: The second and third sentences of this paragraph, were revised to read: "Municipalities utilizing ground water for domestic purposes are Fordoche, Morganza,

and New Roads. They obtain their water primarily from the Pliocene although New Roads has one well pumping from the Miocene. These municipalities pump approximately 800,000 gallons per day." (See page II-24 of final statement.)

- Comment: Page II-38, paragraph 3. The alluvial aquifer is primarily 2. used for agricultural purposes (exception--some individual domestic wells and some industrial cooling/washing wells). Ground water for most municipal and industrial purposes comes from deeper aquifers.
- Response: This paragraph was revised as follows: The second sentence was changed to read, "An adequate supply of water for municipal and industrial needs is obtained with wells from the Pliocene aquifer."

The fourth sentence was changed to read: "The alluvial aquifer is used primarily for agricultural purposes."

(See page II-27, paragraph 5 of final statement.)

# Advisory Council on Historic Preservation

# Comment: Compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470 [f]).

- A. If the Parlange Plantation House will not be affected by the project, a section detailing this determination must appear in the environmental statement.
- B. If the Parlange Plantation House will be affected by the project, the environmental statement must contain an account of steps taken in compliance with Section 106 and a comprehensive discussion of the contemplated effects on the National Register property. (36 C.F.R. Part 800 details compliance procedures.)
- Response: As stated in paragraph 3, page II-83 of the December 1975 draft, the Louisiana State University determined Parlange Plantation House would not be affected by the installation of project measures. Included in the survey on which this determination was based was a literature study done in cooperation with the Louisiana Department of Art, Historical and Cultural Preservation who received a final report of the complete survey.

This paragraph was replaced by two paragraphs in the final statement on page II-62, to expand the documentation of this determination. These two paragraphs read as follows:

"The installation of project measures will not affect any archaeological, historical or cultural sites. This includes in particular the LeJeune House and Wurtelle Memorial which have been nominated by inclusion in the National Register. Parlange Plantation House which is the only historic site listed in the National Register of Historic Places for Pointe Coupee Parish will also be unaffected by the project.

This was determined under a contract with the Department of Geography and Anthropology of the Louisiana State University who conducted archival research followed by a field survey. The University conducted the archival research in cooperation with the Louisiana Department of Art, Historical and Cultural Preservation."

#### Comment:

- 2. Compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment" of May 13, 1971.
  - A. Under Section 2(a) of the Executive Order, Federal agencies are required to locate, inventory, and nominate eligible historic, architectural and archaeological properties under their control or jurisdiction to the National Register of Historic Places. The results of this survey should be included in the environmental statement as evidence of compliance with Section 2(a).
  - B. Until the inventory required by Section 2(a) is complete, Federal agencies are required by Section 2(b) of the Order to submit proposals for the transfer, sale, demolition, or substantial alteration of federally owned properties eligible for inclusion in the National Register to the Council for review and comment. Federal agencies must continue to comply with Section 2(b) review requirements even after the initial inventory is complete, when they obtain jurisdiction or control over additional properties which are eligible for inclusion in the National Register or when properties under their jurisdiction or control are found to be eligible for inclusion in the National Register subsequent to the initial inventory.

The environmental statement should contain a determination as to whether or not the proposed undertaking will result in the transfer, sale, demolition or substantial alteration of eligible National Register properties under Federal jurisdiction. If such is the case, the nature of the effect should be clearly indicated as well as an account of the steps taken in compliance with Section 2(b). (36 C.F.R. Part 800 details compliance procedures.)

C. Under Section 1(3), Federal agencies are required to establish procedures regarding the preservation and enhancement of non-federally owned historic, architectural, and archaeological properties in the execution of their plans and programs.

The environmental statement should contain a determination as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures and objects of historical, architectural or archaeological significance.

Response: The Soil Conservation Service does not administer any lands in this watershed. Therefore Sections 2A and 2B of the comments are not applicable to this project. The EIS addresses the potential impacts on the archaeological and historical properties as suggested.

Secondly, in cognizance of and in compliance with Executive Order 11593, the Soil Conservation Service issued working guidelines for its agency. These guidelines SCS Advisory - EVT - 7 dated May 5, 1975, in part as they pertain to this comment are quoted as follows:

"Executive Order 11593 required federal agencies to take certain inventory and other actions with respect to the federal lands they administer. SCS assisted watershed project rarely make a change in federal land ownership and therefore cause no change in these responsibilities. Executive Order 11593 also requires federal agencies, in consultation with the Advisory Council on Historic Preservation, to institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of nonfederally owned sites, structures or objects of historical, architectural or archaeological significance. This has been done on a program basis (in our NEPA guidelines, environmental memoranda and advisories, project planning handbooks, and elsewhere) and no further action is required in individual projects."

Comment: Contact with the State Historic Preservation Officer
3.

The procedures for compliance with Section 106 of the National Historic Preservation Act of 1966 and the Executive Order 11593 require the Federal agency to consult with the appropriate State Historic Preservation Officer. The State Historic Preservation Officer for Louisiana is Jay R. Broussard, Director, Department of Art, Historical and Cultural Preservation, Old State Capitol, North Boulevard, Baton Rouge, Louisiana 70801.

Response: The archaeological, historical and cultural determinations for this watershed were based on a survey under contract with the Curator of the Department of Geography and Anthropology of the Louisiana State University. It included a literature survey which was done in cooperation with the Louisiana Department of Art, Historical and Cultural Preservation. The latter also received a final report of the entire survey. Based on the findings of this survey, the office of the State Historic Preservation Officer issued clearance for the project.

#### Louisiana Forestry Commission -

Comment: We have no objections to the environmental impact statement for the Bayou Grosse Tete Watershed Project.

I do question the need for the emphasis placed on "Forest Land Wildlife Habitat Management" since this item is always considered in timber management plans for individuals.

Response: This was emphasized to assure that wildlife and the environment received the required consideration in the planning of this project.

#### United States Environmental Protection Agency -

Comment: We are classifying your Draft Environmental Impact Statement as LO-1. Specifically, we have no objection to the proposed action. The statement provided sufficient information to evaluate the potential environmental impacts of the project. The classification and the date of our comments will be published in the <u>Federal</u> Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

Response: None required.

#### State of Louisiana - Stream Control Commission -

Comment: A copy of our field level review and assessment of (General) possible effects of this project on False River and Bayou Grosse Tete and receiving waters thereof is attached for your consideration.

We have no further comments to offer on this project at this time.

- Comment: Insufficent data are presented on residual pesticide

  1. levels in the sediments of the project streams or
  in the extant organisms. No attention has been paid
  to the increase in nutrients and micronutrients which
  will be introduced into False River or to Bayou Grosse
  Tete. Allochthonous nutrients will be incorporated
  into the tropic cycles in False River. Recycling of
  these nutrients will accelerate the natural aging
  processes which are already proceeding rapidly due
  to riparian land use.
- Response: No data on pesticide residue levels in sediment or existing organisms within the watershed is available.

  Allochthonous nutrients are discussed on Pages II-57 and II-59. The project will not effect the riparian land use of False River.
- Comment: False River, for evaluating nutrient exchange, should

  2. be considered a monomictic lake with adequate mixing for most of the year preventing or retarding the formation of a hypolimnion for effective removal of nutrients. Thus, the effect of an increase in nutrients would be felt over a greater period of time than in a system where these nutrients are removed or become unavailable to the epilimnion.

Response: None.

Comment: It is unclear to me how increased and more efficient

3. runoff can reduce erosion and sediment transport as claimed in this statement. The reduction of erosion depends entirely upon land use and the cooperation of land users which is an uncontrollable variable.

Land treatment practices should be mandatory and be instituted prior to channelizing.

Response: The manner in which the project will reduce erosion and sediment transport is discussed on pages II-51, II-55, and II-56. The planned lad treatment program is the first increment of any P.L. 566 project and it's installation is an integral part of the project. See page II-9 regarding the installation of land treatment measures. Land treatment plus both on-farm and off-farm structural measures will help to control runoff.

Comment: The effects mentioned above would be felt much less
4. severely in Bayou Grosse Tete because of its lotic nature. The major concern here would be the greater downstream translation of nutrients into Grand River and ultimately to estuarine waters.

Response: The downstream effects of the project are stated on page II-59, 1st paragraph. See also the response to the comment by the National Marine Fisheries Service of the U.S. Department of Commerce in this regard.

#### United States Department of the Interior

Comment: Page II-6, Paragraph 2. An explanation should be given as to why only 8,150 acres of forest land are scheduled for accelerated forest management when over 34,000 acres are available for such treatment.

Response: The 8,150 acres of forest land scheduled for management is the acreage estimated by the Forest Service needing treatment as part of the planned project to meet current needs and to be carried out within the planned installation period. This acreage is comprised of scattered farm woodlots on private land throughout the watershed.

Management decisions are at the discretion of the landowners. This does not however preclude forest management on additional acreage subsequent to the completion of the project.

Comment: Page II-12, Paragraph 2. More than 27,000 acres of

2. forest land could be managed for wildlife habitat
instead of the 6,150 acres scheduled for such management.
This difference should be explained.

Response: The 6,150 acres of forest land treatment oriented toward wildlife management is the number of acres estimated to be practical to treat during the installation period within the scope of the sponsors objectives of the planned project. As stated in Comment #1, this acreage is comprised of scattered farm woodlots on private woodlots throughout the watershed and management decisions and implementation are at the discretion of the landowner. Economic considerations are also taken into account by the landowner in carrying out these forestry practices.

The forest land treated during the installation period does not preclude the treatment of any additional forest acreage subsequent to the planned installation of the project.

Gomment: Page II-20, Paragraph 2. The installation of pipe

3. drops concurrently with channel work in channel systems
M-1 and M-2 is proposed to reduce the production of
sediment and thus decrease the sediment load entering
False River. This technique appears to have merit
but some indication should be given as to the amount
of sediment reduction expected as compared to the
sediment load expected from construction without his
technique. This reduction in sediment should be reflected
in the table on page II-74.

Response: The installation of pipe drops concurrently with the construction of a channel, prevents erosion which occurs due to head cutting at the inlets. The amount of reduction for each drop will be dependent upon rainfall characteristics at the time of construction. The tabulation now shown on page II-56 reflects average annual figures based on the life of the project. Construction erosion is of a temporary, short duration and is dealt with separately as indicated in the paragraph following the tabulation indicated above.

- Comment: Page II-20, Paragraph 3. The following special construction techniques to minimize adverse impacts on fish and wildlife habitats should be included in the final environmental statement:
  - 1. Eliminate excavation in forest-land habitat at all points where flow characteristics can be sufficiently improved by any other method.
- Response: Complied with. Comment included in its entirety as Item 6, page II-14 of the final statement.
- Comment: Page II-20, Paragraph 3. Limit excavation when possible to the east side of the channel to minimize increased water temperatures resulting from heating effects of the afternoon sun.
- Response: The following construction technique was added to the list of techniques as Technique No. 7, page II-14:

"Limit excavation where possible to the east side of channels having intermittent flow or ponded water to minimize increased water temperatures resulting from heating effects of the afternoon sun."

- Gomment: Page II-51, second paragraph. It is noted that the

  6. Department of Geography and Anthropology of Louisiana
  State University provided archaeological information.
  There is, however, no information in the draft statement other than that found on page II-83 to the effect that no cultural resources would be affected by the installation of structural measures. The land treatment measures could be very destructive of archaeological materials.
- Response: The archaeological, historical and cultural survey identified existing and potentially significant resources in the watershed area. None of the resources are seen to be impacted by project measures and if resources of cultural value are discovered during the installation of any project measure, procedures under executive order 11593 will be complied with as required of all Federally assisted projects.
- Comment: The final environmental statement should cite the 7. report of the archaeologist who surveyed the project area and should contain a summary of the results of that survey.

Response: This is indicated in the "Impacts Section" and relates also to comment no. 14. See the response to comment no. 14 for the rewording.

8. Page II-67. It is indicated that the application of land treatment measures will result in the increase and improvement of fish and wildlife habitat. Properly managed land treatment programs do have the potential of being beneficial to wildlife and improving water quality. However, it should be pointed out that the individual land users are responsible for the installation and maintenance of land treatment measures. The measures these land users employ are usually agriculturally oriented and any benefits to fish and wildlife are often incidental. Therefore, this section should be reworded to so indicate.

Response: The following paragraph was added to the Planned Project Section, page II-9: "The individual land users have the responsibility of installing the indicated land treatment measures.

The first paragraph, page II-67 of the December 1975 draft was revised and now appears in the final statement, page II-51 as follows:

"The land treatment program will increase crop production and improve soil cover. As a result, erosion and sediment will be reduced thus improving water quality. These land treatment measures will not only improve the agricultural productivity of the watershed but will also enhance aquatic and upland wildlife habitat."

9. Page II-70, Paragraph 3. This paragraph and the table on page II-71 describe increased peak stages at selected points in channels within the Bayou Grosse Tete Watershed. However, no mention is made of any stage increases beyond the limits of the watershed. A previous discussion of downstream drainage patterns (page II-38, paragraph 1) describes an extensive area that will be affected by the watershed drainage as it flows to the Gulf of Mexico. The impacts of the runoff from the Bayou Grosse Tete Watershed on peak stages in this downstream area should be discussed along with the effect of the runoff from the currently active Johnson Bayou, Choctaw Bayou, and Lake Verret Watershed projects which drain into the same area. The discussion of

stage increases should also include the effect of the runoff from the M-1 and M-2 channel systems on the water levels of False River. It is not apparent from the table on page II-71 how the outlets of M-1 and M-2 can show a stage increase without affecting the water levels in the lake.

Response: This paragraph was replaced by the following two paragraphs which appear on page II-53 of the final statement to clarify the wording:

"Within the watershed, peak stages will be increased in some channels downstream from the channel work. These stage increases are shown for selected points in the tabulation on page II-54. There will be no change in peak stages downstream from the confluence of Channel M-7 and Bayou Grosse Tete and the confluence of Channel M-7 and the borrow pit. These two points represent the lowermost limits of the effects of the project measures on peak stages.

The project will not alter the volume of water entering False River. However, it is expected to affect the changes in peak stages for channels M-1 and M-2 immediately upstream from False River. These peak stages are indicated in the tabulation on page II-54."

Comment: Page II-70 thru 73. The statement summarizes in sufficient detail the occurrence of groundwater in the project area but does not address related impacts. It should at least evaluate effects of both the land treatment measures and of decreased flooding as a result of channel work on recharge, water levels, and quality of water in the unconfined alluvial aquifer.

Response: The following statement was added to the "Impacts" section on page II-53:

"No effects on the groundwater are anticipated due to project action. The increased rate of runoff due to channel construction will cause a slight decrease in the recharge of the aquifer. The channel work will also cause a slight increase in the permeability of the material on the bottom of the channel. Some land treatment measures such as chiseling and subsoiling increase permeability. The unconfined aquifer is hydraulically connected to the Mississippi River and depending on the stage of the river it can be either effluent or influent."

Comment: Page II-73, Paragraph 3. It is emphasized that land
11. treatment measures will result in a reduction of 68,000 tons of erosion per year. Equal emphasis should be placed on information from the table on page II-73 which indicates that the project is predicted to reduce sheet erosion by 6,000 tons per year from present amounts.

Response: In making comparisons it is necessary to compare events, results or effects within the same time frame. A comparison of the present erosion with erosion of the future would be erroneous unless all factors that caused erosion were to remain static except the factor being evaluated. In regard to the Grosse Tete watershed there are land use changes which will occur regardless of the project. Consequently, the effects of the project need to be measured at some point in time in the future when the project becomes operational and its effects are realized.

Comment: Page II-74, Paragraph 2. The information in the table on page II-74 which indicates that False River will receive 4,000 tons more sediment per year with the project than it presently receives should be emphasized.

Response: The response in comment 11 also applies to this comment.

Comment: Page II-75, Paragraph 3. It is misleading to state that construction induced turbidities, suspended solids, sedimentation, and plant nutrients will have a minor effect on water of False River. This may be the case, but the possibility also exists that approximately 2,800 tons of construction sediment could be extremely damaging if concentrated in certain areas of the lake. We suggest that this paragraph be rewritten.

Response: The possibility of unexpected but possible impacts to fishery resource of False River due to project action is discussed on page II-56 and II-57 of the "Impacts" section.

Comment: Page II-83, third Paragraph. There should be a clear statement of the precise effects of the project upon the one existing and two nominated National Register of Historic Places sites in the final statement. The sites should be identified on a map.

Response: This paragraph was replaced by two new paragraphs on page II-62 of the final statement, to expand the documentation of the determination that no archaeological or historical sites would be affected by the project.

This was in response to a comment by the Advisory Council on Historic Preservation. These two paragraphs read as follows:

"The installation of the project will not affect any archaeological, historical or cultural sites. This includes in particu, ar the LeJeune House and Wurtelle Memorial which have been nominated for inclusion in the National Register. Parlange Plantation House which is the only historic site listed in the National Register of Historic Places for Pointe Coupee Parish will not be affected by the project.

This was determined under a contract with the Curator of the Department of Geography and Anthropology of the Louisiana State University who conducted archival research followed by a field survey. The University conducted the archival research in cooperation with the Louisiana Department of Art, Historical and Cultural Preservation. "The determination that no sites would be affected by the project was based on a survey under contract with the Curator of the Louisiana State University. Based on the findings of this report, the Louisiana Department of Art, Historical and Cultural Preservation issued clearance for the project."

The location of the LeJeune House and Wurtelle Memorial have been added to the narrative on page II-40, of the Environmental Setting section.

- Comment: Page II-88, Paragraphs 7 and 8. These statements are presented as fact when they are actually predictions and should be qualified as such.
- Response: Paragraph 7 was revised to read, "Erosion and the resulting suspended sediment and sedimentation will be less with the project than it would be without the project." (See page II-65 of final statement.)

Paragraph 8 was revised to read, "Sheet erosion will be reduced from approximately 328,000 tons per year to approximately 260,000 tons per year." (See page II-65 of final statement.) Comment: Pages 91 thru 101. The draft environmental statement 16. could be improved by including an evaluation of the impacts of the recommended and alternative actions on existing and potential recreational resources.

Response: The following paragraph was added to the "Land Treatment Only" alternative, page II-67. "The enhancement of wildlife habitat under this alternative would also enhance the recreational resources by providing improved hunting."

Page II-68. Land Use More Tolerant To Wet Conditions. The following statement was added to the "Land Use More Tolerant To Wet Conditions" alternatives in the next to last paragraph: "This would enhance recreation by providing additional land for hunting."

Page II-69. Flood Proofing and Land Treatment
The following paragraph was added to the "Flood Proofing and Land Treatment" alternative: "Hunting as a form of recreation would also be enhanced."

Page II-70. The following statement was added to the "Channel Work and Land Treatment": "Recreation would be enhanced by this alternative in that favorable benefits to wildlife and fisheries would in turn provide some degree of improvement to hunting and fishing in the watershed."

#### United States Department of Commerce

Comment:

The Final Environmental Impact Statement (FEIS) should list and describe all existing and proposed local, State and Federal flood prevention, drainage and navigation projects in the 1,800,000 acre drainage area lying between the East Atchafalaya Basin Protection Levee and the Mississippi River and Bayou Lafourche from Morganza, Louisiana, to the Gulf of Mexico. The cumulative effects of the existing and proposed projects on the fishery resources of downstream estuarine areas should be thoroughly discussed. The FEIS should compare the quantity and quality of freshwater discharge prior to development of the watershed with the current discharge and the discharge expected on project completion. Also, the effects of freshwater discharge should be discussed relative to changes in salinity regimes downstream and subsequent effects on aquatic organisms. The FEIS should further discuss the effects of increased runoff of fertilizers, pesticides, herbicides, nutrients, detritus, and sediment on aquatic biota in the watershed and the estuary.

Response: Within the area defined in the comment, there are three planned P.L. 566 projects with technical assistance being provided by the SCS. These are the Bayou Grosse Tete, Choctaw Bayou, and Lake Verret Watersheds. Planning data indicates no meaningful analysis of downstream hydrological effects could be developed for the following reasons:

- (1) The volume of runoff will not change as a result of the project.
- (2) The estimated change in maximum stage at the watershed outlets for any storm that produces out-of-bank flow is less than .05 foot, and the estimated change in maximum discharge is less than 50 cubic feet per second.
- (3) Changes in stages and discharges will diminish progressively downstream in absolute quantity as a result of the massive storage effect of lakes, swamps, and marshes.
- (4) For individual events, the net results of interactions of altered and unaltered hydrographs on absolute values of changes in the composite hydrograph configurations would never exceed the changes in the altered subhydrographs, and would almost always be less in varying degrees. On some occasions the net changes in the composite hydrographs would be in the opposite direction from the changes in the altered subhydrographs.
- (5) The probable error involved in any conceivable model for determining downstream discharges would far exceed the differences in discharge.

Since this information indicates there would be no significant downstream cumulative changes in freshwater discharges from the three P.L. 566 projects there would similarly be no significant effects on existing salinity regimes downstream from these three watersheds.

In regard to the effects of increased runoff containing plant nutrients, herbicides, pesticides, detritus,

and sediment, there would be no significant cumulative increase in runoff downstream with the projects installed as stated above.

Secondly the movement of agricultural chemicals to water courses is a primary environmental concern of all three projects.

Studies have shown that following application, agricultural chemicals are lost from the soil through surface runoff, sediment loss, volatilization, organism uptake and degradation (microbial, photochemical, and chemical). (See page II-59) These studies also show that the relative degree of significance of each of these mechanisms are related to existing environmental conditions and the type of chemical involved.

Two of the mechanisms in particular are recognized as the major transporters of agricultural chemicals to aquatic systems. These are surface runoff and sediment delivery. Each of the three P.L. 566 projects in the area defined include measures to reduce sediment and runoff both within the watershed and downstream. (See page II-56) Measures to reduce sediment are included in a land treatment program that will include the application of soil conserving vegetative practices and on-farm structural measures by the landusers.

Studies supporting the value of land treatment measures have been conducted on the Blackland Experimental Watershed near Riesel, Texas. The purpose of these studies was to determine how much erosion and sediment delivery rates would be reduced by fully applying and establishing land treatment measures within a watershed. The results showed that sediment resulting from these conditions was only 12 percent of that coming from watersheds not receiving conservation land treatment.

By localizing the effects of each of the P.L. 566 watershed projects in the area defined, the cumulative downstream effects of all three projects would not be significant enough to relate to the cumulative effects of all other projects. Information on projects, by other agencies is available from the responsible agency.

Projects of other agencies that directly relate to this project are described on page II-41.

#### Louisiana Wild Life and Fisheries Commission -

- Comment: Page II-11, Paragraph 4. Land treatment measures must be installed if sedimentation is to be reduced and yet this phase of the project is not a certainty. Landowners are not required to install land treatment measures.
- Response: The first increment of project measures under the provisions of P. L. 566 are land treatment measures. A land treatment program has been developed as an integral part of this watershed plan. Assurance of implementation is indicated on page II-9.
- Comment: Page II-19, Paragraph 3. Since the channel systems M
  2. 1 and M-2 are not to be constructed concurrently with each other and the installation of one of these channel systems will be completed before channel work starts on the other, we suggest that the construction of the second channel system be delayed as long as possible during the 6 year period of construction. This will allow additional time for partial vegetative recovery of the first channel before the second channel is started and serve to reduce sediment entering the lake.
- Response: When contracts for the installation of these two systems are drawn up, this will be considered in the timing of construction as planned. (See pages II-13 and II-14.)
- Comment: Page II-45, Paragraph 2. Gulf Pipefish and Southern
  3. Hogchoker are unusual and infrequently collected in the project area.
- Response: This paragraph has been revised to include "....in the project area." It appears in the fourth paragraph on page II-35 of the final statement.
- Comment: Page II-74, Paragraph 2. Sediment to False River will

  4. be reduced below projected levels but will be increased over present levels.
- Response: The increase in sediment is attributed to the increase in sediment in the absence of the project until the

time of installation and is not attributed to effects of the project. See also the response to comment no. 11 of the U. S. Department of Interior regarding the same subject.



#### LIST OF APPENDIXES

- Appendix A Comparison of Benefits and Costs for Structural Measures
- Appendix B Project Map
- Appendix C Letters of Comment Received on Draft Environmental
  Impact Statement
- Appendix D Operation and Maintenance Agreement for Structural
  Measures
- Appendix E Bibliography
- Appendix F Figures
- Appendix G Interpretations of Water Quality Parameters
- Appendix H General and Specific Water Quality Criteria
- Appendix I Common and Scientific Names of Animals Mentioned in Text
- Appendix J Channel Work by Reaches

Approved by:

Alton Mangum

Alton Mangum

State Conservationist

Date: March 15, 1976

APPENDIX A - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Bayou Grosse Tete Watershed, Louisiana

(Dollars)

		Av	Average Annual BenefitsL	Benefits <u>l</u> /		••		
		: More Intensive:				••	Average , :	Bunefit
Evaluation Unit	: Reduction	: Land Use	: Drainage :	: Drainage : Redevelopment : Secondary :	: Secondary :	Total	: Annual Cost <sup>2</sup> / :	Cast Ratio
П	235,200	47,500	213,800	10,000	57,900	564,400	83,000	6.8:1
11	169,600	34,300	154,200	6,700	32,300	397,100	54,300	7.3:1
III	71,900	14,500	65,300	4,200	13,000	168,900	35,300	4.8:1
IV	55,400	11,200	50,300	5,100	15,800	137,800	49,800	2.8:1
Project Administration							21,100	
TOTAL	532,100	107,500	483,600	26,000	119,000 1,268,200	1,268,200	243,500	5.2:1

1/ Price Base - 1975 current normalized prices.

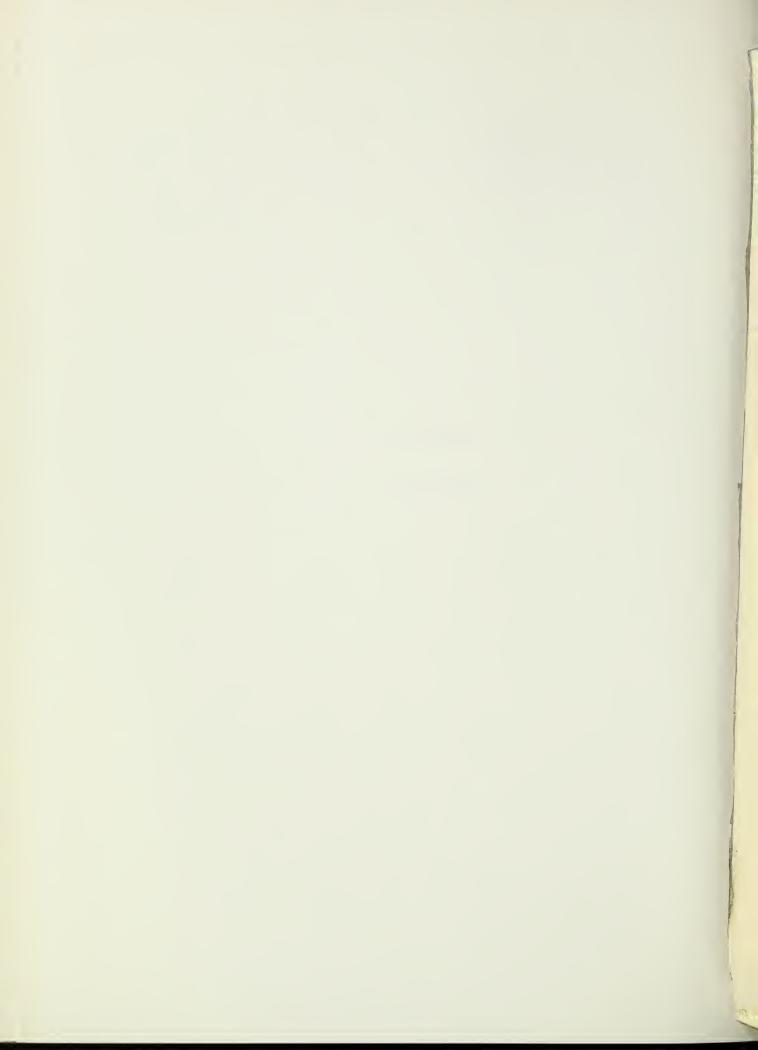
December 1975

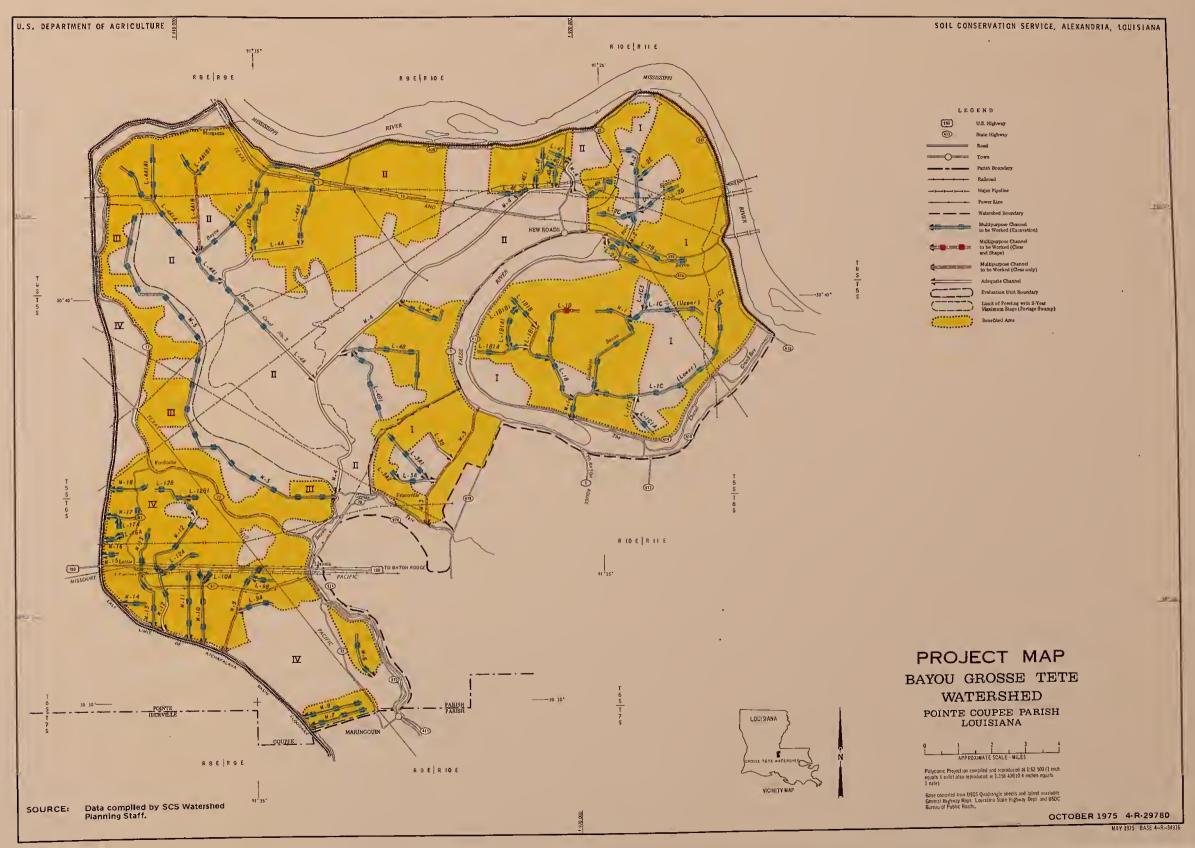
 $<sup>\</sup>frac{2}{2}$ / Based on a 50-year evaluation period at a discount rate of 5 7/8 percent.



APPENDIX B

PROJECT MAP







#### APPENDIX C

LETTERS OF COMMENT RECEIVED ON DRAFT ENVIRONMENTAL IMPACT STATEMENT





#### STATE OF LOUISIANA

COMMISSION ON INTERGOVERNMENTAL RELATIONS

EDWIN EDWARDS
GOVERNOR

SENATOR MICHAEL H. OKEEFE

CHAIRMAN

LEON TARVER
EXECUTIVE DIRECTOR

January 7, 1976

Mr. Alton Mangum State Conservationist Soil Conservation Service U. S. Department of Agriculture P. O. Box 1630 Alexandria, LA 71301

Dear Mr. Mangum:

We have reviewed the Draft Environmental Impact Statement for the Bayou Grosse Tete Watershed, Pointe Coupee Parish, with respect to agency impact and responsibility. As indicated on page II-3 of the summary, the list of State Agencies requested to review and comment on the document is sufficient. However, please note that the Division of Natural Resources and Energy and the Attorney General wish to be removed from your list to receive future statements.

A copy of the Statement will be retained in our office and is available for public inspection, and a Notice of Availability will be published in our newsletter.

Sincerely,

DeWitt H. Braud, Jr.

Environmental Coordinator

DHBJr:bsm





## State of Tonisiana DEPARTMENT OF PUBLIC WORKS

P. O. BOX 44155, CAPITOL STATION BATON ROUGE, LOUISIANA 70804

January 16, 1976

BOARD OF PUBLIC WORKS GEORGE CHANEY, CHAIRMAN EMMETT A. EYMARD P. P. VERRETT, SR. RICHARD P. GIBSON ROLAND CARTER

Mr. Alton Mangum State Conservationist Soil Conservation Service P. O. Box 1630 Alexandria, Louisiana 71301

Dear Mr. Mangum:

This Department is pleased to respond to your letter dated December 1, 1975, which transmitted a copy of the watershed plan and environmental impact statement for the Bayou Grosse Tete Watershed Project, Louisiana. You requested comments and review by this Department.

As previously acknowledged in earlier correspondence, we find the project to be well planned and adequately covering needs of the watershed. The draft environmental impact statement appears to be comprehensive and well structured. We are pleased to endorse both the watershed plan and the draft environmental impact statement. We urge approval of this report by the necessary authorities at the earliest possible time.

We appreciate the opportunity to review and comment on this report.

Sincerely yours,

Director

GRD/cjh





#### DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

## REGIONAL OFFICE

1114 COMMERCE STREET DALLAS, TEXAS 75202

Our Reference: EI# 0176-642

Alton Mangum
State Conservationist
U. S. Department of Agriculture
P. O. Box 1630
Alexandria, Louisiana 71301

RE: Bayou Grosse Tete Watershed Pointe Coupee Parish, LA

Dear Mr. Mangum:

Pursuant to your request, we have reviewed the Environmental Impact Statement for the above project proposal in accordance with Section 102(2) (c) of P. L. 91-190, and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational health and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse effects that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental laws and regulations.

We, therefore, have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Very truly yours,

William F. Crawford

Regional Environmental Officer



### DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Proposal:	ect
Draft Environmental Impact Statement Reviewed with Objections	
Draft Environmental Impact Statement Reviewed with No Objections	Х
Date: December 11, 1975 EI# 0176-642	

Agency/Bureau:

DHEW/PHS

Project Proposal:

Bayou Grosse Tete Watershed Pointe Coupee Parish, Louisiana

Comments:





# U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION REGION SIX

#### 750 Florida Boulevard Baton Rouge, Louisiana 70801

January 2, 1976

IN REPLY REFER TO

Draft Watershed Plan and Draft Environmental Impact Statement Bayou Grosse Tete Watershed Pointe Coupee Parish, Louisiana

Mr. Alton Mangum, State Conservationist Soil Conservation Service U. S. Department of Agriculture P. O. Box 1630 Alexandria, Louisiana 71301

Dear Mr. Mangum:

Your December 1, 1975, letter solicited comments regarding the subject draft environmental statement.

The statement indicates work with minor costs involved in modification or replacement of bridges and culverts on the State Highway System. Coordination with the Louisiana Department of Highways will be appropriate if the proposed activity is implemented.

We wish to thank you for the opportunity to comment on the proposed project.

Sincerely yours,

M. C. Reinhardt

Division Administrator





### United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
P.O. Box 66492
Baton Rouge, Louisiana 70896

January 22, 1976

Mr. Alton Mangum
Soil Conservation Service
P.O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

We have reviewed the environmental documents for the Bayou Gros Tete Watershed, Choctaw Bayou Watershed and Upper Pointe Coupee Loop Area/Johnson Bayou Watershed with respect to the hydrologic information presented. We find these to be reasonably accurate and adequate in hydrologic information; we do have the following comments:

Bayou Gros Tete Watershed:

- 1. Page II-34, paragraph 2. Other municipalities in the watershed utilize ground water for domestic purposes.
- 2. Page II-38, paragraph 3. The alluvial aquifer is primarily used for agricultural purposes (exception--some individual domestic wells and some industrial cooling/washing wells). Ground water for most municipal and industrial purposes comes from deeper aquifers.

Choctaw Bayou Watershed:

- 1. Page II-38, last paragraph. The city of Port Allen obtains municipal water from three wells.
- 2. Page II-39, chemical analysis. Carbon dioxide (CO<sub>2</sub>), calculated equals 1.7 ppm; also, unit (ppm) for most constituents is not shown.

Sincerely yours,

FOR THE DISTRICT CHIEF

Max J. Forbes, Jr.

Hydrologist

cc:

Regional Hydrologist, CR, WRD Lakewood, Colorado MS 406 Mr. George H. Davis, WRD Attn: G. H. Chase

Reston, Virginia MS 107





### United States Department of the Interior

## OFFICE OF THE SECRETARY WASHINGTON, D.C. 20240

PEP ER-75/1145

JAN 29 1976

Dear Mr. Mangum:

Thank you for the letter of December 1, 1976, requesting our views and comments on the combined watershed plan and draft environmental statement for Bayou Grosse Tete Watershed, Pointe Coupee Parish, Louisiana. Specific comments arranged by page numbers are presented below.

### Page II-6, Paragraph 2

An explanation should be given as to why only 8,150 acres of forest land are scheduled for accelerated forest management when over 34,000 acres are available for such treatment.

### Page II-12, Paragraph 2

More than 27,000 acres of forest land could be managed for wildlife habitat instead of the 6,150 acres scheduled for such management. This difference should be explained.

### Page II-20, Paragraph 2

The installation of pipe drops concurrently with channel work in channel systems M-l and M-2 is proposed to reduce the production of sediment and thus decrease the sediment load entering False River. This technique appears to have merit but some indication should be given as to the amount of sediment reduction expected as compared to the sediment load expected from construction without this technique. This reduction in sediment should be reflected in the table on page II-74.

### Page II-20, Paragraph 3

The following special construction techniques to minimize adverse impacts on fish and wildlife habitats should be included in the final environmental statement:

1. Eliminate excavation in forest-land habitat at all points where flow characteristics can be sufficiently improved by any other method.





2. Limit excavation when possible to the east side of the channel to minimize increased water temperatures resulting from heating effects of the afternoon sun.

### Page II-51, Second Paragraph:

It is noted that the Department of Geography and Anthropology of Louisiana State University provided archeological information. There is, however, no information in the draft statement other than that found on Page II-83 to the effect that no cultural resources would be affected by the installation of structural measures. The land treatment measures could be very destructive of archeological materials.

The final environmental statement should cite the report of the archeologist who surveyed the project area and should contain a summary of the results of that survey.

### Page II-67

It is indicated that the application of land treatment measures will result in the increase and improvement of fish and wildlife habitat. Properly managed land treatment programs do have the potential of being beneficial to wildlife and improving water quality. However, it should be pointed out that the individual land users are responsible for the installation and maintenance of land treatment measures. The measures these land users employ are usually agriculturally oriented and any benefits to fish and wildlife are often incidental. Therefore, this section should be reworded to so indicate.

### Page II-70, Paragraph 3

This paragraph and the table on page II-71 describe increased peak stages at selected points in channels within the Bayou Grosse Tete Watershed. However, no mention is made of any stage increases beyond the limits of the watershed. A previous discussion of downstream drainage patterns (page II-38, paragraph 1) describes an extensive area that will be affected by the watershed drainage as it flows to the Gulf of Mexico. The impacts of the runoff from the Bayou Grosse Tete Watershed on peak stages in this downstream area should be discussed along with the effect of the runoff from the currently active Johnson Bayou, Choctaw Bayou, and Lake Verret Watershed projects which drain into the same area. The discussion of stage increases should also include



the effect of the runoff from the M-l and M-2 channel systems on the water levels of False River. It is not apparent from the table on page II-7l how the outlets of M-l and M-2 can show a stage increase without affecting the water levels in the lake.

### Page II-70 thru 73

The statement summarizes in sufficient detail the occurrence of groundwater in the project area but does not address related impacts. It should at least evaluate effects of both the land treatment measures and of decreased flooding as a result of channel work on recharge, water levels, and quality of water in the unconfined alluvial aquifer.

### Page II-73, Paragraph 3

It is emphasized that land treatment measures will result in a reduction of 68,000 tons of erosion per year. Equal emphasis should be placed on information from the table on page II-73 which indicates that the project is predicted to reduce sheet erosion by 6,000 tons per year from present amounts.

### Page II-74, Paragraph 2

The information in the table on page II-74 which indicates that False River will receive 4,000 tons more sediment per year with the project than it presently receives should be emphasized.

### Page II-75, Paragraph 3

It is misleading to state that construction induced turbidities, suspended solids, sedimentation, and plant nutrients will have a minor effect on the water of False River. This may be the case, but the possibility also exists that approximately 2,800 tons of construction sediment could be extremely damaging if concentrated in certain areas of the lake. We suggest that this paragraph be rewritten.

### Page II-83, Third Paragraph

There should be a clear statement of the precise effects of the project upon the one existing and two nominated National Register of Historic Places sites in the final statement. The sites should be identified on a map.



### Page II-88, Paragraphs 7 and 8

These statements are presented as fact when they are actually predictions and should be qualified as such.

### Pages 91 thru 101

The draft environmental statement could be improved by including an evaluation of the impacts of the recommended and alternative actions on existing and potential recreational resources.

We hope these comments will be of assistance to you in the preparation of the final statement.

Sincerely yours,

Deputy Assistant

Secretary of the Interior

Mr. Alton Mangum State Conservationist Soil Conservation Service Department of Agriculture Post Office Box 1630 Alexandria, Louisiana 71301





# Louisiana Forestry Commission

James E. Mixon, State Forester

Box 1628

Baton Rouge, Louisiana 70821

COOPERATION - PL 566 - Bayou Grosse Tete Watershed

January 26, 1976

Mr. Alton Mangum State Conservationist ASCS P. O. Box 1630 Alexandria, LA 71301

Dear Mr. Mangum:

We have no objections to the environmental impact statement for the Bayou Grosse Tete Watershed Project.

I do question the need for the emphasis placed on "Forest Land Wildlife Habitat Management" since this item is always considered in timber management plans for individuals.

B. F. GRIFFIN - ASSISTANT CHIEF, FOREST MANAGEMENT

DY

C: Mr. Duane Routh District Forester Miller



Advisory Council
On Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

January 13, 1976

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

This is in response to your request of December 1, 1975 for comments on the environmental statement for Bayou Grosse Tete Watershed, Pointe Coupee Parish, Louisiana. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that while you have discussed the historical, architectural, and archeological aspects related to the undertaking, the Advisory Council needs additional information to adequately evaluate the effects on these cultural resources. Please furnish additional data indicating:

- I. Compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470[f]).
  - A. If the Parlange Plantation House will not be affected by the project, a section detailing this determination must appear in the environmental statement.
  - B. If the Parlange Plantation House will be affected by the project, the environmental statement must contain an account of steps taken in compliance with Section 106 and a comprehensive discussion of the contemplated effects on the National Register property. (36 C.F.R. Part 800 details compliance procedures.)



Page 2 January 13, 1976 Mr. Alton Mangum Bayou Grosse Tete Watershed

# II. Compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment" of May 13, 1971.

- A. Under Section 2(a) of the Executive Order, Federal agencies are required to locate, inventory, and nominate eligible historic, architectural and archeological properties under their control or jurisdiction to the National Register of Historic Places. The results of this survey should be included in the environmental statement as evidence of compliance with Section 2(a).
- В. Until the inventory required by Section 2(a) is complete, Federal agencies are required by Section 2(b) of the Order to submit proposals for the transfer, sale, demolition, or substantial alteration of federally owned properties eligible for inclusion in the National Register to the Council for review and comment. Federal agencies must continue to comply with Section 2(b) review requirements even after the initial inventory is complete, when they obtain jurisdiction or control over additional properties which are eligible for inclusion in the National Register or when properties under their jurisdiction or control are found to be eligible for inclusion in the National Register subsequent to the initial inventory.

The environmental statement should contain a determination as to whether or not the proposed undertaking will result in the transfer, sale, demolition or substantial alteration of eligible National Register properties under Federal jurisdiction. If such is the case, the nature of the effect should be clearly indicated as well as an account of the steps taken in compliance with Section 2(b). (36 C.F.R. Part 800 details compliance procedures.)



Page 3 January 13, 1976 Mr. Alton Mangum Bayou Grosse Tete Watershed

C. Under Section 1(3), Federal agencies are required to establish procedures regarding the preservation and enhancement of non-federally owned historic, architectural, and archeological properties in the execution of their plans and programs.

The environmental statement should contain a determination as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures and objects of historical, architectural or archeological significance.

### III. Contact with the State Historic Preservation Officer.

The procedures for compliance with Section 106 of the National Historic Preservation Act of 1966 and the Executive Order 11593 require the Federal agency to consult with the appropriate State Historic Preservation Officer. The State Historic Preservation Officer for Louisiana is Jay R. Broussard, Director, Department of Art, Historical and Cultural Preservation, Old State Capitol, North Boulevard, Baton Rouge, Louisiana 70801.

Should you have any questions or require any additional assistance, please contact Michael H. Bureman of the Advisory Council staff at P. O. Box 25085, Denver, Colorado 80225, telephone number (303) 234-4946.

Sincerely yours,

Michael A. Borna-

Louis S. Wall

Assistant Director, Office of Review and Compliance





### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI 1600 PATTERSON DALLAS, TEXAS 75201 January 26, 1976

Mr. Alton Mangum State Conservationist Soil Conservation Service P. O. Box 1630 Alexandria, Louisiana 71301

Dear Mr. Mangum:

We have reviewed the Draft Watershed Plan and Draft Environmental Impact Statement, Bayou Grosse Tete Watershed, Point Coupee Parish, Louisiana. The proposed project consists of approximately 115 miles of channel work with appurtenant structures that include one grade stabilization structure and structure for water control (pipe drops). The channel work will involve clearing and shaping on 1 mile, clearing only on 9 miles, new construction on 3 miles, and enlargement by excavation on 102 miles. Of the 112 miles of work proposed on existing streams or channels, about 107 miles have ephemeral flow, about 4 miles have intermittent flow, and 4 miles have ponded water.

We are classifying your Draft Environmental Impact Statement as LO-1. Specifically, we have no objection to the proposed action. The statement provided sufficient information to evaluate the potential environmental impacts of the project. The classification and the date of our comments will be published in the <u>Federal Register</u> in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

We appreciate the opportunity to review the Draft Environmental Impact Statement. Please send us two copies of the Final Environmental



Impact Statement at the same time it is sent to the Council on Environmental Quality.

Sincerely yours,

John C. White Regional Administrator

Enclosure



### ENVIRONMENTAL IMPACT OF THE ACTION

### LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

### ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

### EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

### ADEQUACY OF THE IMPACT STATEMENT

### Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

### Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

### Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.



STATE OF LOUISIANA
STREAM CONTROL COMMISSION
P.O. DRAWER FC
UNIVERSITY STATION
BATON ROUGE, LOUISIANA 70803
January 30, 1976

United States Department of Agriculture Soil Conservation Service Post Office Box 1630 Alexandria, Louisiana 71301

#### Gentlemen:

Re: Draft Watershed Plan and Draft Environmental Inpact Statement for Watershed Protection, Flood Prevention, and Drainage--Bayou Grosse Tete Watershed Point Coupee Parish, Louisiana

Reference is made to your letter of December 1, 1975, above subject project.

A copy of our field level review and assessment of possible effects of this project on False River and Bayou Grosse Tete and receiving waters thereof is attached for your consideration.

We have no further comments to offer on this project at this time.

Very truly yours,

Robert A. Lafleur

Toleco Joffen

Executive Secretary

das Enclosure



# STATE OF LOUISIANA STREAM CONTROL COMMISSION P.O. DRAWER FC UNIVERSITY STATION BATON ROUGE, LOUISIANA 70803

January 27, 1976

To:

Thomas J. Gilbert, Biologist, Administrative

From:

M. B. Watson, Biologist II

Subject:

EIS and Draft Watershed Plan, Bayou Grosse Tete Watershed

Insufficient data are presented on residual pesticide levels in the sediments of the project streams or in the extant organisms. No attention has been paid to the increase in nutrients and micronutrients which will be introduced into False River or to Bayou Grosse Tete. Allochthonous nutrients will be incorporated into the tropic cycles in False River. Recycling of these nutrients will accelerate the natural aging processes which are already proceeding rapidly due to riparian land use.

False River, for evaluating nutrient exchange, should be considered a monomictic lake with adequate mixing for most of the year preventing or retarding the formation of a hypolimnion for effective removal of nutrients. Thus, the effect of an increase in nutrients would be felt over a greater period of time than in a system where these nutrients are removed or become unavailable to the epilimnion.

It is unclear to me how increased and more efficient runoff can reduce erosion and sediment transport as claimed in this statement. The reduction of erosion depends entirely upon land use and the cooperation of land users which is an uncontrollable variable. Land treatment practices should be mandatory and be instituted prior to channelizing.

The effects mentioned above would be felt much less severely in Bayou Grosse Tete because of its lotic nature. The major concern here would be the greater downstream translation of nutrients into Grand River and ultimately to estuarine waters.

das





#### UNITED STATES DEPARTMENT OF COMMERCE The Assistant Secretary for Science and Technology Washington, D.C. 20230

February 2, 1976

Mr. Alton Mangum State Conservationist Soil Conservation Service Department of Agriculture P. O. Box 1630 Alexandria, Louisiana 71301

Dear Mr. Mangum:

This is in reference to your draft environmental impact statement entitled "Bayou Crosse Tete Watershed, La." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving four (4) copies of the final statement.

Sincerely,

Sidney R. Galler

Deputy Assistant Secretary for Environmental Affairs

Enclosure - Memo from National Marine Fisheries Service, Jan. 12, 1976







### U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE

Duval Building 9450 Gandy Boulevard St. Petersburg, FL 33702

January 12, 1976

FSE21/GB

TO:

Director

Ofc of Ecology & Environmental Conservation, EE

Robert L. Schueler 1011 1: 1876

THRU: Associate Director for Resource Management

William H. Stevenson Regional Director

SUBJECT: Comments on Draft Environmental Impact Statement --

Bayou Grosse Tete Watershed Pointe Coupee Parish,

LA (SCS) (DEIS #7512.05)

The Draft Environmental Impact Statement for Bayou Grosse Tete Watershed Pointe Coupee Parish, Louisiana, that accompanied your memorandum of December 4, 1975, has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

### GENERAL COMMENTS:

The Final Environmental Impact Statement (FEIS) should list and describe all existing and proposed local, State and Federal flood prevention, drainage and navigation projects in the 1,800,000 acre drainage area lying between the East Atchafalaya Basin Protection Levee and the Mississippi River and Bayou Lafourche from Morganza, Louisiana, to the Gulf of Mexico. The cumulative effects of the existing and proposed projects on the fishery resources of downstream estuarine areas should be thoroughly discussed. The FEIS should compare the quantity and quality of freshwater discharge prior to development of the watershed with the current discharge and the discharge expected on project completion. Also, the effects of freshwater discharge should be discussed relative to changes in salinity regimes downstream and subsequent effects on aquatic organisms. The FEIS should further discuss the effects of increased runoff of fertilizers, pesticides, herbicides, nutrients, detritus, and sediment on aquatic biota in the watershed and the estuary.

F34, NMFS, Washington, D.C. (3) cc: FSE212, Galveston, TX









WILD LIFE AND FISHERIES COMMISSION
400 ROYAL STREET

J. BURTON ANGELLE

NEW ORLEANS 70130

January 30, 1976

EDWIN EDWARDS

Mr. Alton Mangum
State Conservationist
United States Department of Agriculture
Soil Conservation Service
Post Office Box 1630
Alexandria, Louisiana 71301

Re: Review of Bayou Grosse Tete Watershed
Draft Plan and Draft Environmental
Impact Statement

Dear Mr. Mangum:

Our technical staff has reviewed the Bayou Grosse Tete Watershed Draft Plan and Draft Environmental Impact Statement.

As indicated in earlier comments on this project we are deeply concerned that this project could significantly reduce the water quality in False River which would damage the fisheries resources in this lake. Specifically our comments regarding this problem can be listed as follows:

Page II-11-Paragraph 4 - Land treatment measures must be be installed if sedimentation is to be reduced and yet this phase of the project is not a certainty. Landowners are not required to install land treatment measures.

Page II-19-Paragraph 3 - Since the channel systems M-1 and M-2 are not to be constructed concurrently with each other and the installation of one of these channel systems will be completed before channel work starts on the other, we suggest that the construction of the second channel system



Mr. Alton Mangum Page 2 January 30, 1976

be delayed as long as possible during the 6 year period of construction. This will allow additional time for partial vegetative recovery of the first channel before the second channel is started and serve to reduce sediment entering the lake.

Additionally, as suggested in previous correspondence of October 16, 1975, we feel that the following changes are desirable:

Page II-45-Paragraph 2 - Gulf Pipefish and Southern Hogchoker are unusual and infrequently collected in the project area.

Page II-74-Paragraph 2 - Sediment to False River will be reduced below projected levels but will be increased over present levels.

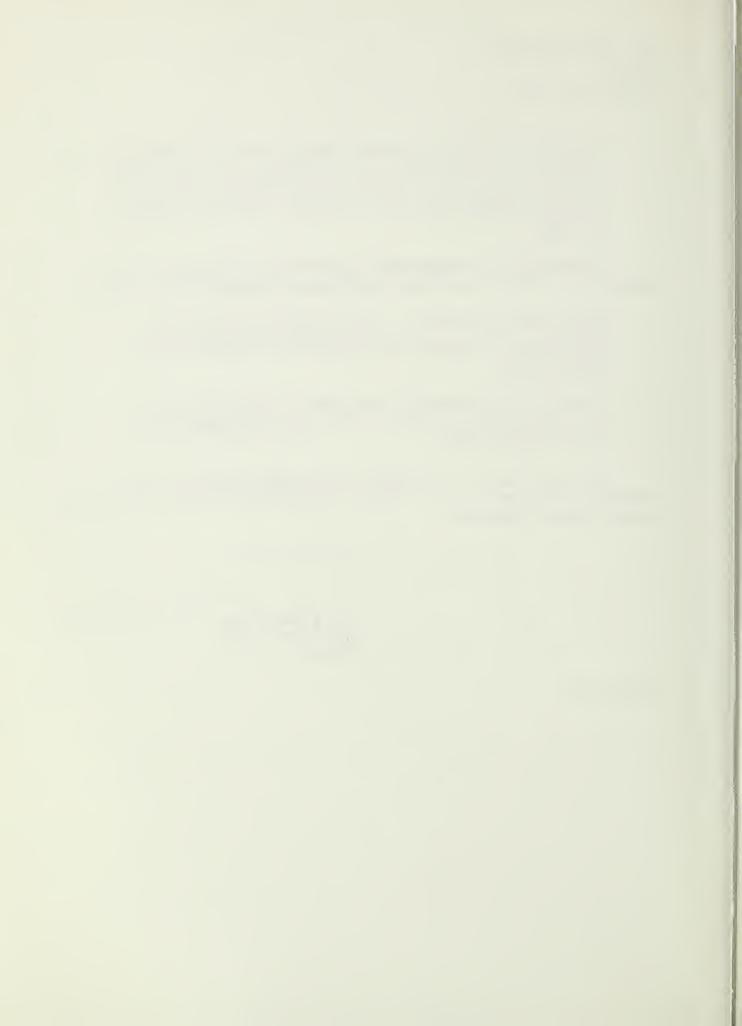
We hope that our comments will be useful and very much appreciate the opportunity to review the Watershed Plan and Environmental Impact Statement.

Sincerely yours,

Burton Angelle

Director

JBA:DD:sd



### **EXAMPLE**

### APPENDIX D

### OPERATION AND MAINTENANCE AGREEMENT

# FOR STRUCTURAL MEASURES

THIS AGREEMENT made and entered into the day of
, 19 is between the Soil Conservation Service,
United States Department of Agriculture, hereinafter referred
to as the "Service," and the following organization (s), hereinafter
referred to as the Sponsor(s):

PROJECT

Show name(s) of Sponsoring Local Organization(s) responsible for operation and maintenance

The measures covered by this Operation and Maintenance Agreement are identified as:

Individually name and identify the works of improvement listed in the Work Plan.

As an example:

All multiple purpose channels listed in the Watershed Work Plan.

### A. OPERATIONS

- 1. The Sponsor will be responsible for and will operate or have operated without cost to the Service the structural measures in compliance with any applicable Federal, State, and local laws, and in a manner that will assure that the structural measures will serve the purpose for which installed as set forth in the Work Plan.
- 2. The Service will, upon request of the Sponsor and to the extent that its resources permit, provide consultative assistance in the operation of the structural measures.

### B. MAINTENANCE

- 1. The Sponsor will:
  - a. Be responsible for and promptly perform or have performed without cost to the Service except as provided in Paragraph C, Establishment Period, all maintenance of the structural measures determined by either the Sponsor or the Service to be needed.
  - b. Obtain prior Service approval of all plans, designs, and specifications for maintenance work involving major repair.
- 2. The Service will, upon request of the Sponsor and to the extent that its resources will permit, provide consultative assistance in the preparation of plans, designs, and specifications for needed repair of the structural measures.

### C. ESTABLISHMENT PERIOD

- 1. During an Establishment Period, as herein defined, the Service will bear such part of the cost of any needed major repairs to the structural measures, including associated vegetative work, as is proportionate to the original construction costs borne by the Service in the construction of the structural measures except that the Service will not bear any of the cost for:
  - a. Repairs to channels or portions thereof which do not have permanent linings such as concrete, riprap, or grouted rock.
  - b. Repairs determined by the Service to have been occasioned by improper operation and maintenance, or both.
  - c. Repairs that are mutually determined by the Sponsor and the Service as being items of normal maintenance rather than major repair and are not therefore in keeping with the spirit and intent of the Establishment Period provisions.
- 2. The Establishment Period for structural measures (exclusive of any associated vegetative work) is a period of 3 years ending at midnight on the third anniversary of the date on which the structural measure is accepted.

- 3. The Establishment Period for vegetative work associated with a structural measure is a period from date of acceptance of the initial vegetative work to midnight of the date on which the Service writes the Sponsor advising that an adequate vegetative cover has been obtained. However, this period shall not exceed two growing seasons or the end of the Establishment Period for the associated structural measure whichever is greater in time.
- 4. As used in the two preceding paragraphs, and elsewhere in this Agreement, the following words have the meanings described below:

ACCEPTED, ACCEPTANCE: The date structural or vegetative measures are accepted from the contractor when a contract is involved, or the date structural or vegetative measures are completed to the satisfaction of the Service when force account operations are involved.

ADEQUATE VEGETATIVE COVER: A minimum of seventy percent (70 percent) evenly distributed cover of the desirable species, with no active rilling that cannot be controlled by the vegetation.

- 5. Major repair may involve such things as (1) replacing significant backfill around structures resulting from major erosion damage, (2) revegetating where adequate cover was not obtained, (3) restoring areas with significant erosion, and (4) removing trash and debris from bridges, culverts, and fence crossings.
- 6. No action with respect to needed repairs during the Establishment Period will be taken by the Sponsor or the Service which would lessen or adversely affect any legal liability of any contractor or his surety for payment of the cost of the repairs.

# D. INSPECTIONS AND REPORTS

1. During the Establishment Period the Sponsor and the Service will jointly inspect the structural measures at least annually and after unusually severe floods or the occurrence of any other unusual condition that might adversely affect the structural measures. It is desirable that annual inspections be performed during

the month shown below. Any supplemental inspections then determined necessary will be scheduled and agreed to at that time.

(Month)

2. After the Establishment Period, the structural measures will be inspected annually by the Sponsor, preferably during the month shown below, and after unusually severe floods or the occurrence of any other unusual condition that might adversely affect the structural measures.

(Month)

- 3. After the Establishment Period, the Service may inspect the structural measures at any reasonable time.
- 4. A written report will be made of each inspection. The report of joint inspections will be prepared by the Sponsor with the assistance of the Service. A copy of each report will be provided by the party preparing the report to the other party within 10 days of the date on which the inspection was made.

### E. RECORDS

The Sponsor will maintain in a centralized location a record all inspections performed both individually and jointly by the Sponsor and the Service, and of all significant actions taken by the Sponsor with respect to operation and maintenance. The Service may inspect these records at any reasonable time.

### F. GENERAL

- 1. The Sponsor will:
  - a. Prohibit the installation of any structures or facilities that will interfere with the operation or maintenance of the structural measures.

- b. Obtain prior Service approval of the plans and specifications for any alteration or improvement to the structural measures.
- c. Obtain prior Service approval of any agreement to be entered into with other parties for the operation or maintenance of all or any part of the structural measures, and provide the Service with a copy of agreement after it has been signed by the Sponsor and the other party.
- 2. Service personnel will be provided the right of free access to the structural measures at any reasonable time for the purpose of carrying out the terms of this agreement.
- 3. The responsibilities of the Sponsor under this agreement are effective simultaneously with the acceptance of the works of improvement in whole or in part.

### G. SPECIAL PROVISIONS

An Operation and Maintenance (O&M) Plan will be prepared for each structure or channel (or similar groups of structures or channels) listed on page one of this agreement at the time of advertisement for bids for such structures or channels. Such O&M plans will be made a part of this agreement.

### H. AUTHORIZATION

Name of Sponsor			
Ву	Title		
This action was authorized named immediately above on			
Attest	Title		
Name of Sponsor			
Ву	Title		
This action was authorized named immediately above on			
Attest	Title		

Soil	Conservation	Service,	United	States	Department	of	Agriculture
Ву			T:	itle			

# OPERATION AND MAINTENANCE PLAN (CHANNELS)

These channels have been designed and constructed to provide flood protection and drainage for the surrounding lands. This will be accomplished if the channel dimensions are not reduced and the flow of water is not obstructed by trees, brush, weeds, cross fences, and heavy trash. For example, a moderately heavy growth of 2-year old willows in the channel could cut the planned capacity by 50 percent or more. The same is true for equivalent growths of cottonwoods, alders, and water-loving plants such as cattails.

Another important feature of the channel job is the service road along the banks. It is essential that this road be passable with maintenance equipment at all times.

Many of the things required to keep the channel in good working condition could be called routine maintenance which is really nothing more than "normal good care." This includes:

1. Control of brush and weeds. Removal of willows, cottonwoods, alders, the larger woody-stemmed weeds and water plants is a yearly job. They may need attention twice a year in those years when conditions are unusually favorable for rapid regrowth. The job of control more than doubles with the age of the plants. As an example, the difficulty and cost of killing 2-year old willows can be about four times as difficult and costly as killing them in the early seedling stage. In addition, the 2-year old and older willows tend to block the channel even after they are killed.

Spraying, chopping, or mowing are all effective ways of getting rid of brush and weeds. Remember, the service road and the berms need attention the same as the channel.

The kinds of brush that are likely to give the most trouble are blackwillow, buttonbush, cottonwood, and sycamore.

The best time to spray is about the time the brush becomes full-leaved.

CAUTION: If herbicides are handled or applied improperly or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, fish or wildlife and they may contaminate water supplies. Drift from aerial spraying can contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

- 2. Keep fences and water gaps in good condition. Look them over after each bank-full flow. Replace missing staples and posts; replace broken wire.
- 3. Maintain side inlet structures and bridges. Replace any soil that washed from around the metal pipes under the service road.
- 4. Remove sediment deposits as soon as possible after they are formed. If allowed to remain they not only reduce the size of the channel, they provide good sites for willows and other brush to get a foothold. They may also divert the flow and cause erosion of the channel banks.

#### APPENDIX E

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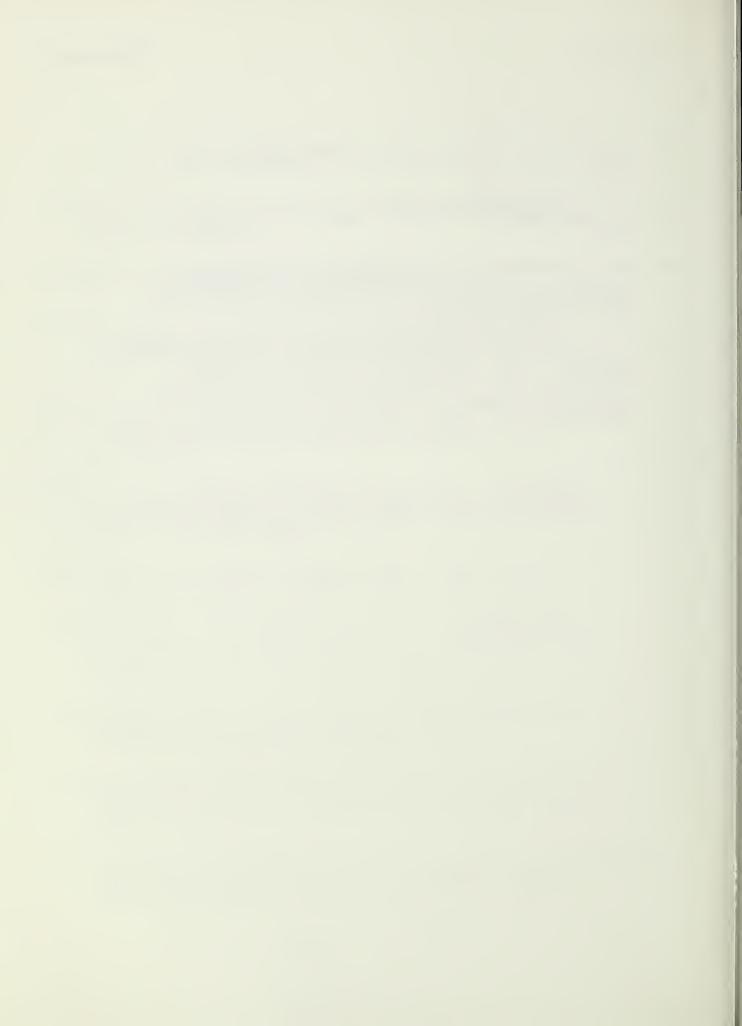
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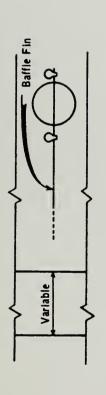
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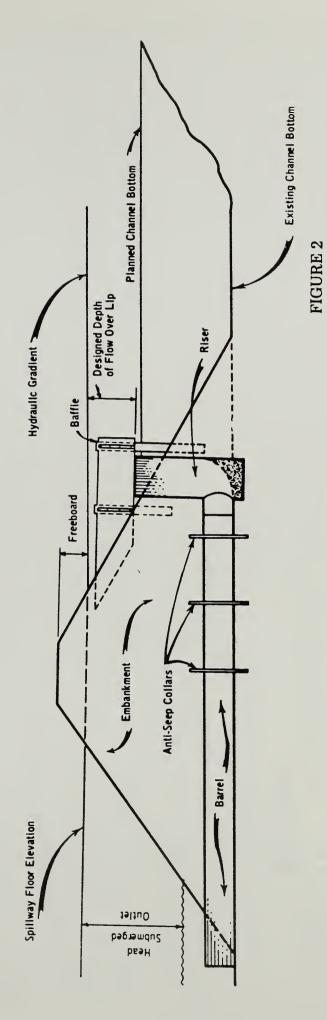


APPENDIX F - FIGURES





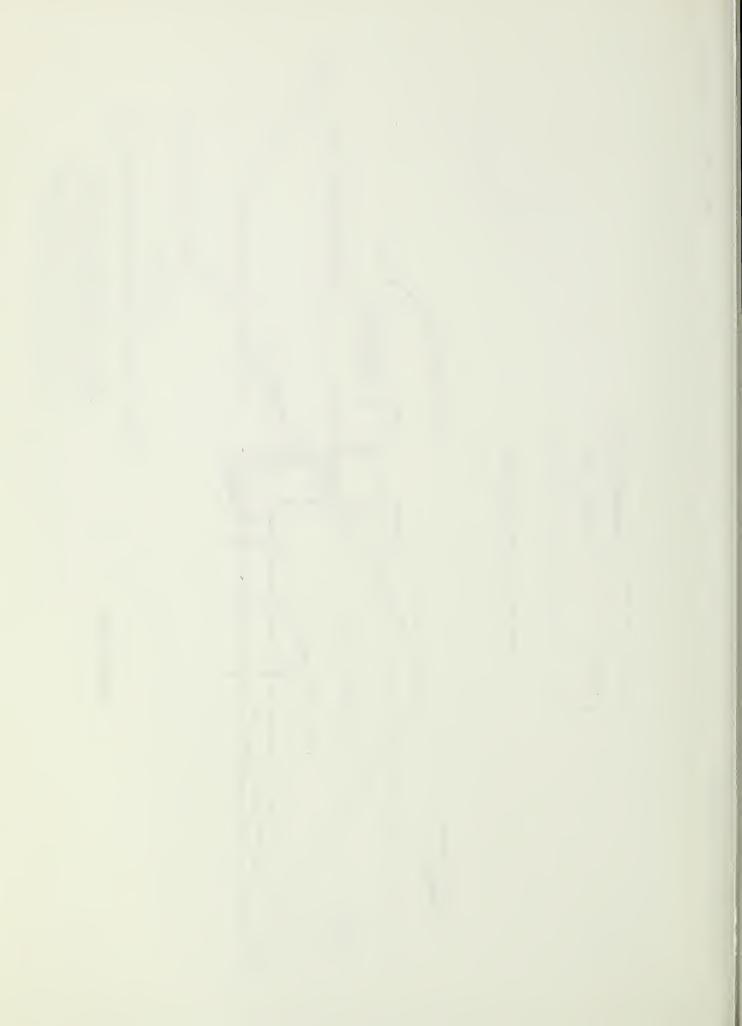
PLAN VIEW OF BAFFLE AND RISER

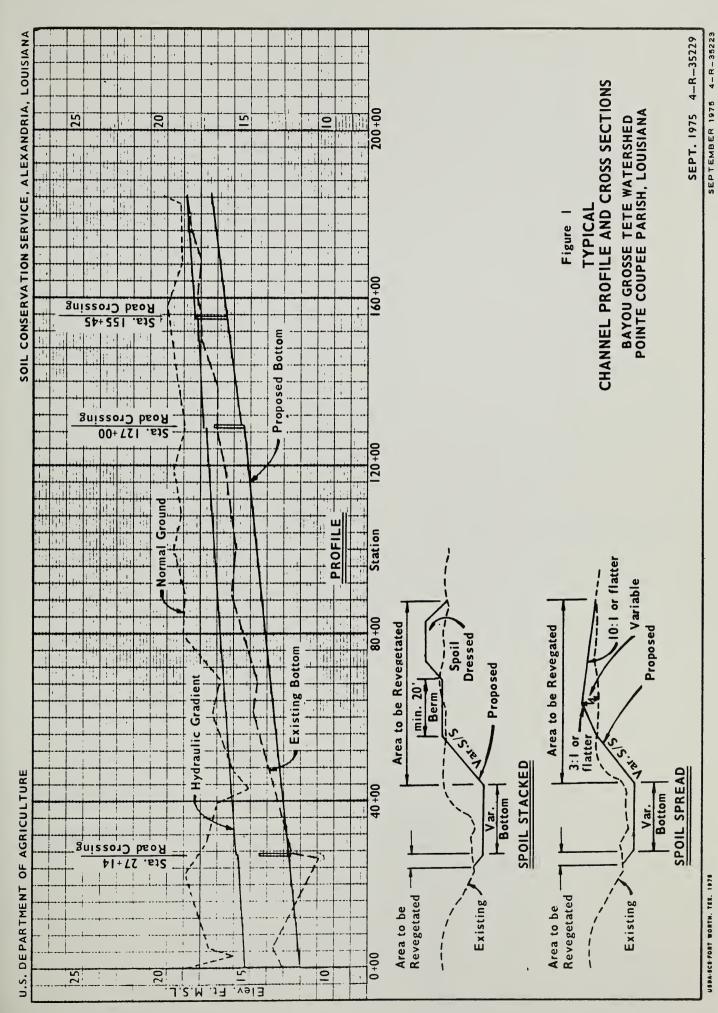


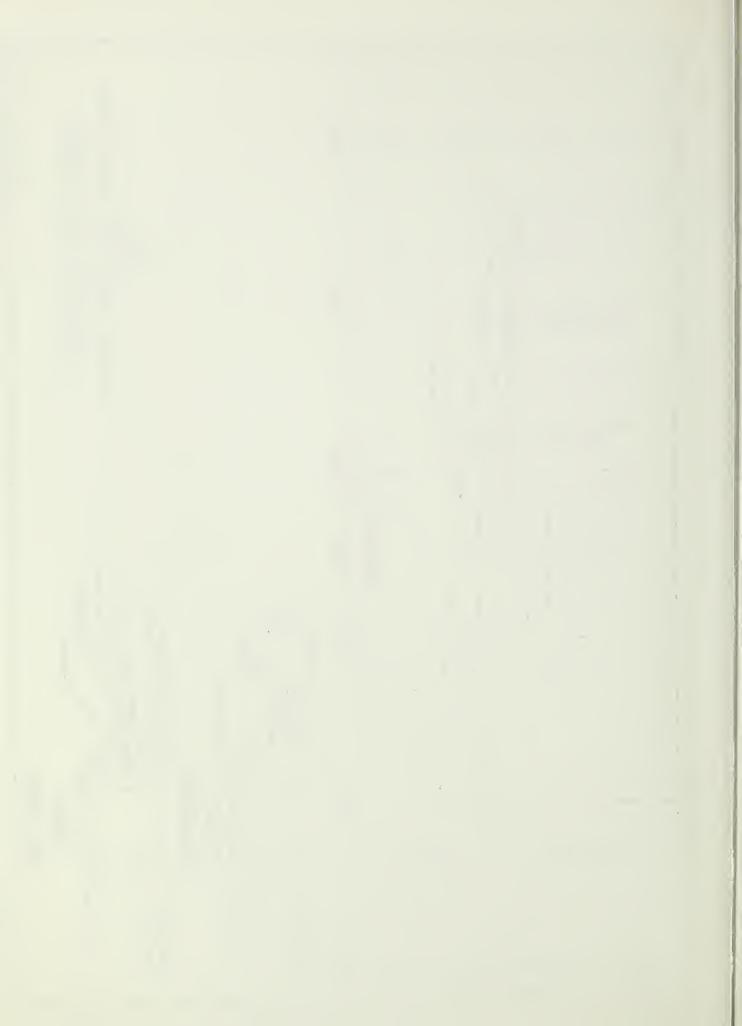
TYPICAL GRADE STABILIZATION STRUCTURE

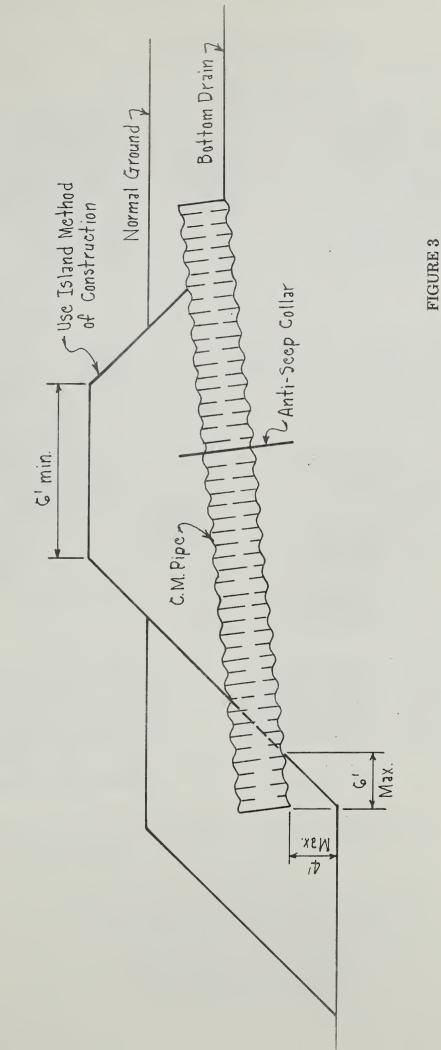
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE BAYOU GROSSE TETE WATERSHED POINTE COUPEE PARISH, LOUISIANA

SECTION VIEW



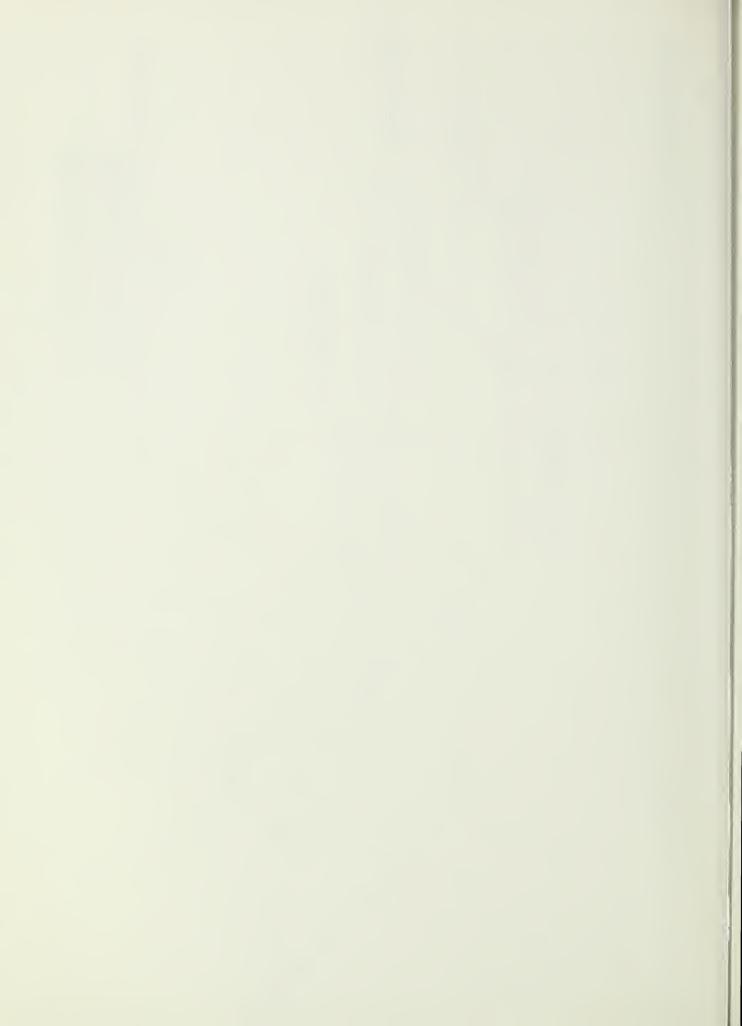


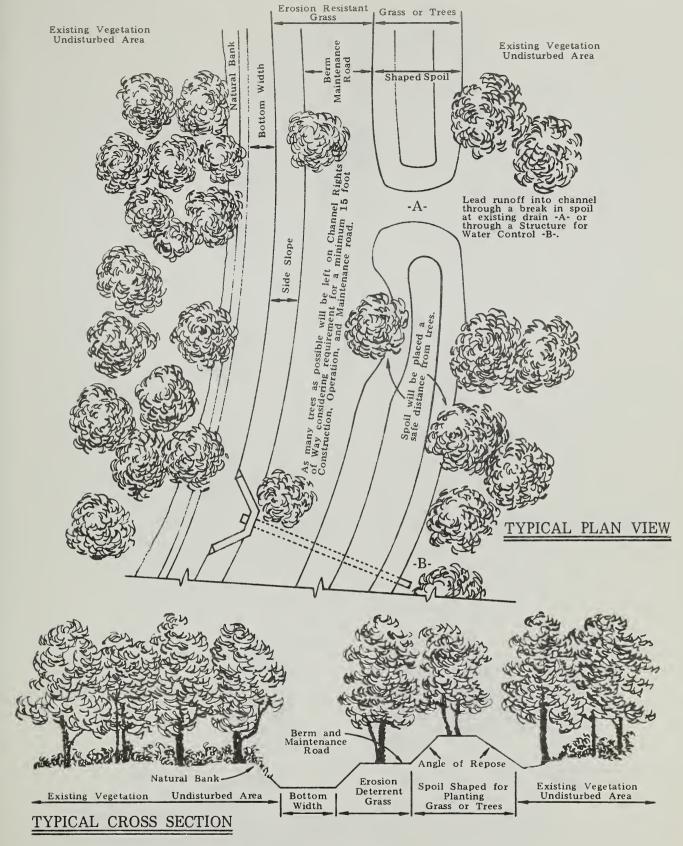




TYPICAL STRUCTURE FOR WATER CONTROL (PIPE DROP)

BAYOU GROSSE TETE WATERSHED
POINTE COUPEE PARISH, LOUISIANA
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



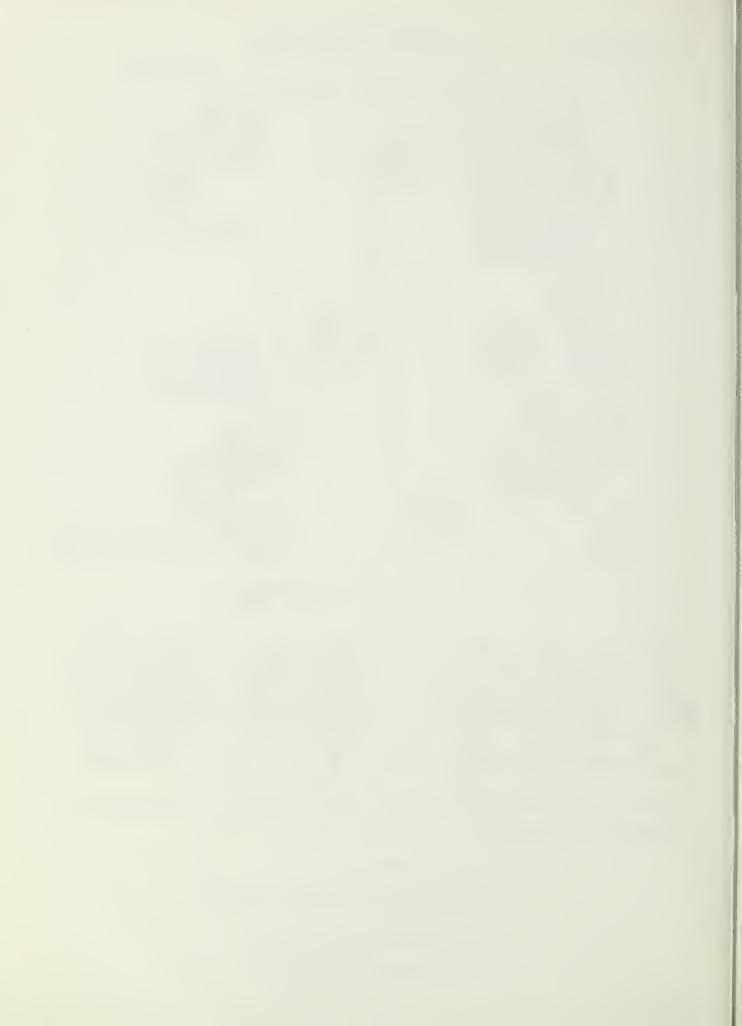


# FIGURE 4 TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS THROUGH FOREST LAND

BAYOU GROSSE TETE WATERSHED POINTE COUPEE PARISH, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

USDA: SCS: FORT WORTH, TEX. 1975 4-L-34941 5-75



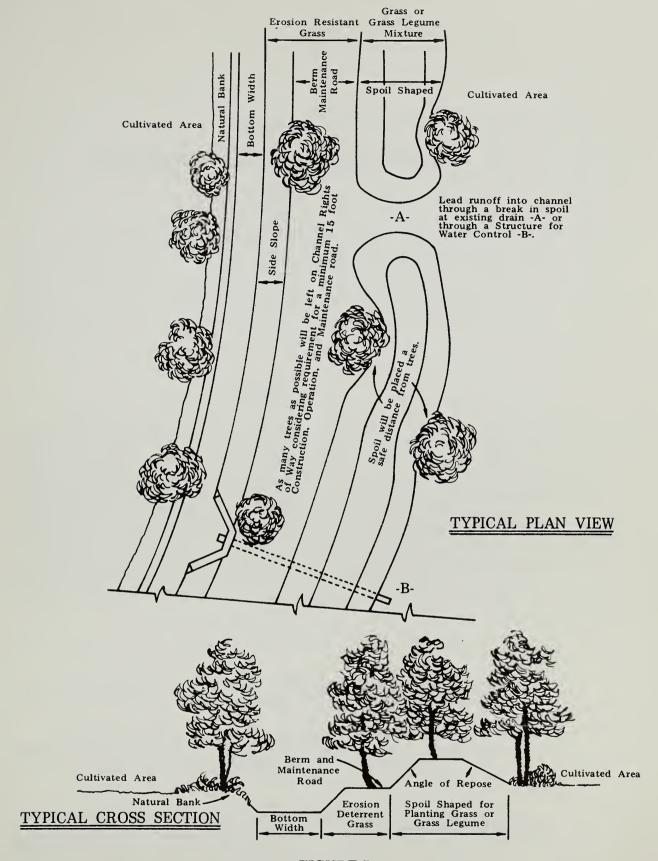
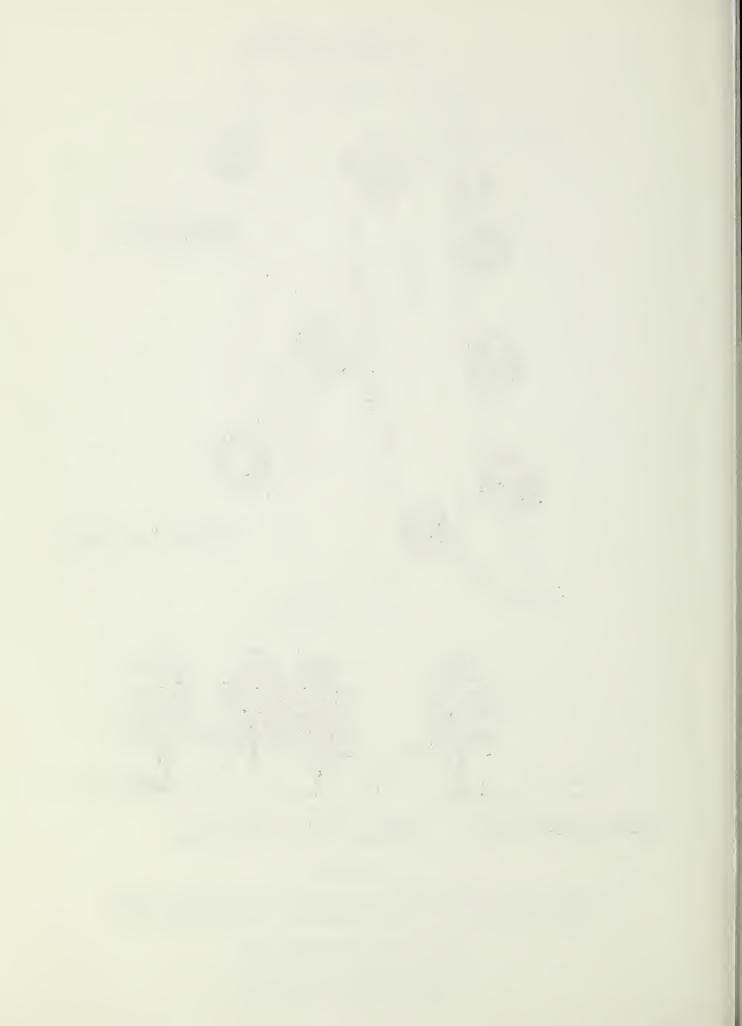


FIGURE 5

TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS WHERE WOODY VEGETATION EXISTS ADJACENT TO CULTIVATED AREA

BAYOU GROSSE TETE WATERSHED POINTE COUPEE PARISH, LOUISIANA

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE



### APPENDIX G

### INTERPRETATIONS OF WATER QUALITY PARAMETERS

### Color

Color of natural waters is derived from substances in solution or from materials in colloidal state. 1/ The standard unit used to measure color is the amount of color produced by adding one mg/1 of platinum to water. Results are expressed as units of color. "Color in excess of 50 units may limit photosynthesis and have a deleterious effect upon aquatic life, particularly phytoplankton and the benthos." 2/

## Hardness

Hardness, or calcium carbonate (CaCO<sub>3</sub>), determinations were made from the Titration Method and expressed as mg/1. "In natural waters, hardness is a characteristic of water which represents the total concentration of just the calcium and magnesium ions expressed as calcium carbonate."3/ Hardness in water may be caused by the natural accumulation of salts from contact with soil and geological formations, or it may enter from direct pollution by industrial wastes. Hardness of waters is not considered a problem for fisheries in Louisiana. A guide for interpreting hardness is: Less than 40 mg/1 is considered soft water, 90-150 mg/1 is medium, while above 150 mg/1 is considered hard water.

<sup>1/</sup> George K. Reid, Ecology of Inland Waters and Estuaries, (New York: Reinhold Publishing Corporation, 1961), p. 101.

<sup>2/</sup> U.S. Department of the Interior, Federal Water Pollution Control Administration, <u>Water Quality Criteria</u> (Washington: U.S. Government Printing Office, 1968), p. 48.

<sup>3/</sup> U.S. Department of the Interior, <u>Chemical Analysis for Water Quality</u>, (Cincinnati: Federal Water Pollution Control Administration, 1967), p. 18-1.

## Nitrogen, Ammonia

Nitrogen, ammonia determinations were made by the Nessler Method. Nitrogen is present in natural waters in the form of inorganic nitrogen compounds such as ammonia, nitrite, and nitrate. The chemical state of nitrogen is dependent on the overall limnology of the waterway since nitrogen, ammonia is quite unstable. In most fresh waters, the concentrations of this inorganic compound are relatively slight, but nevertheless very important in determining the productivity of a given community. "Rivers known to be unpolluted have very low ammonia concentrations, generally less than 0.2 mg/1 as N."4/

### Nitrogen, Nitrate

Nitrogen, nitrate determinations were made by the Cadmium Reduction Method and expressed in mg/1. "Nitrogen, nitrate usually occurs in relatively small concentrations in unpolluted fresh water, the world average being .030 ppm. $\frac{5}{2}$ /

Under normal conditions, the amount of nitrate in solution at a given time is determined by metabolic processes in the body of water, i.e., production and decomposition of organic matter. High nitrate concentrations in effluents and water stimulate the growth of plankton and aquatic weeds. By increasing plankton growth and the development of fish food organisms, nitrates indirectly foster increased fish production.

"Hart et al., report references to the effect that among United States waters supporting a good fish life, ordinarily 5 percent have less than 0.2 mg/l of nitrates; 50 percent have less than 0.9 mg/l; and 95 percent have less than 4.2 mg/l."6/

<sup>4/</sup> Jack E. McKee and Harold W. Wolf, <u>Water Quality Criteria</u>, Publication No. 3-A, Sacramento State Water Quality Control Board, 1963, p. 132.

<sup>5/</sup> George K. Reid, op. cit., p. 101.

<sup>6/</sup> McKee and Wolf, op. cit., p. 132.

### <u>Oxygen</u>

The dissolved oxygen (0<sub>2</sub>) content was determined with a Hach Dissolved Oxygen test kit and expressed in mg/1. The content of dissolved oxygen in the water depends on several factors such as the temperature and salinity of the water, amount of organic material present, light present, and the abundance of phytoplankton. "For a diversified warm-water biota, including game fish, dissolved oxygen concentrations should be above 5 mg/1, assuming normal seasonal and daily variations are above this concentration. Under extreme conditions, however, they may range between 5 and 4 mg/1 for short periods during any 24-hour period, provided that the water quality is favorable in all other respects."7/

### рН

The pH was determined with a Hach pH test kit. The symbol "pH" is used to designate the logarithm (base 10) of the reciprocal of the hydrogen-ion concentration. On a scale of 1 to 14, 7 is considered neutral, below 7 is considered acid, and above 7 alkaline. "In most productive, fresh, natural water, the pH falls in the range between 6.5 and 8.5 (except when increased by photosynthesis activity)."8/ "Bass and bluegill can live from 4.6 to 11; growth and reproduction at either extreme is poor. The optimum level for growth for these fish is 6.5 to 8.5."9/

# Phosphate

The Phosphate, Ortho  $(PO_4)$  determinations were made by the Ascorbic Acid Method which gave a reading in mg/1. This is a test for just Orthophosphate and does not indicate total phosphate

<sup>7/</sup> U.S. Department of the Interior, Federal Water Pollution Control Administration, <u>Water Quality Criteria</u> (Washington: U.S. Government Printing Office, 1968), p. 44.

<sup>8/ &</sup>lt;u>Ibid</u>., p. 44.

<sup>9/</sup> U.S. Department of Agriculture, Soil Conservation Service, Water Quality and Fish Culture, Biology XII, 1968, Technical Note by E. Ray Smith.

content. The major sources of phosphorus entering fresh waters are domestic sewage effluents (including detergents), animal and plant processing wastes, fertilizer and chemical manufacturing spillage, various industrial effluents, and, to a limited extent, erosion materials in agricultural runoff. "Phosphorus is stored in plankton and bottom sediments. Very little of this stored phosphorus re-enters the water. Evidence from the addition of fertilizers to fish ponds and from what is known about the eutrophication of lakes by sewage, supports the view that phosphorus plays a major role in production."10/ Most natural waters contain relatively low levels of phosphorus (0.01 to 0.05 mg/1) in the soluble state during periods of significant productivity.11/ "Optimum growth of all organisms studies in cultures can be obtained in concentrations from 0.09 to 1.8 mg/1 of phosphorus, while a limiting effect on all organisms will occur in phosphorus concentrations from 0.009 mg/1 downward. The lower limit of optimum range of phosphorus concentration varies from about 0.018 to about 0.09 mg/1; and the upper limit from 8.9 to 17.8 mg/1."12/

# Sulfate

Sulfate (SO<sub>4</sub>) content was analyzed by the Turbidimetric method and expressed in mg/1. Sulfates occur naturally in waters as a result of leachings from gypsum and other common minerals. "Sulfate is ecologically important in natural waters in several ways. It is apparently necessary for plant growth; short supply of this material can inhibit the development of phytoplankton populations and, therefore, biological production. Sulfur is important in protein metabolism and is supplied to the organism originally as sulfate."13/ "In U.S. waters that support good game fish, 5 percent of the waters contain less than 11 mg/1 of sulfates, 50 percent less than 32 mg/1, and 95 percent less than 90 mg/1. Experiments indicate that water containing less than 0.5 mg/1 of sulfate will not support growth of algae."14/

<sup>10/</sup> U.S. Department of the Interior, Federal Water Pollution Control Administration: The Practice of Water Pollution Biology, Division of Technical Support, 1969, p. 40.

<sup>11/</sup> U.S. Department of the Interior, Chemical Analysis for Water Quality, (Cincinnati: Federal Water Pollution Control Administration, 1967), p. 15-1.

<sup>12/</sup> S. P. Chu, The Influence of the Mineral Composition of the Medium on the Growth of Planktonic Algae, Journal of Ecology, 31(2); 1943, pp. 109-148.

<sup>13/</sup> Reid, op. cit., p. 101.

<sup>14/</sup> McKee and Wolf, op. cit., p. 132.

### Sulfide

Sulfides (S) were determined by the Methylene Blue Method and expressed in mg/1. Sulfides in water are a result of the natural processes of decomposition, sewage, and industrial wastes such as those from oil refineries, tanneries, pulpmills and paper mills, textile mills, chemical plants, and gas manufacturing facilities.

The toxicity of solutions of sulfides toward fish increase as the pH value is lowered, i.e., the  $\rm H_2S$  or HS rather than the sulfide ion, appears to be the toxicity principle. 15/ "Concentrations in the range of less than 1.0 mg/1 to 25.0 mg/1 are lethal in one to three days to freshwater fish." 16/

## Suspended Solids

Suspended solids consist normally of sediment, organic detritus, bacteria, and plankton in natural waters. The method used for determining the suspended solids content of the water source was by use of the Photometric Method which gives a direct reading of mg/1 of suspended solids. Suspended solids may kill fish and shellfish if exposed to concentrations of 100-200 mg/1 for long periods of time.17/

### Turbidity

Turbidity is the term used to describe the degree of opaqueness produced in water by suspended particulate matter. Excessive turbidity reduces light penetration into the water, and, therefore, reduces photosynthesis by phytoplankton organisms, attached algae, and submersed vegetation. Turbidity calibrations were

<sup>15/</sup> McKee and Wolf, op. cit., p. 132.

<sup>16/</sup> U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1968), p. 88.

<sup>17/</sup> McKee and Wolf, op. cit., p. 132.

originally based on the Jackson candle turbidimeter with results expressed in Jackson Turbidity Units (JTU). As the Jackson equipment lacks sensitivity below 25 JTU (most treated water ranges from 0 to 5 JTU), the meter scale calibrations have been based on a uniform milky polymer called formazin, which allows accurate calibrations over a wide range. The results are expressed as Formazin Turbidity Units (FTU) and are equivalent to the Jackson units. According to Buck (1956), "maximum production of fish is reduced with increasing turbidity."18/

<sup>18/</sup> U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria (Washington: U.S. Government Printing Office, 1968), p. 46.

### APPENDIX H

# GENERAL AND SPECIFIC WATER QUALITY CRITERIA 1/

AESTHETICS -

The present and future use of all streams and water bodies considered in these criteria. The waters of the State shall be maintained in an aesthetically attractive condition and shall meet the generally accepted aesthetic qualifications.

COLOR -

True color shall not be increased to the extent that it will interfere with present usage and projected future uses of the streams and water bodies.

FLOATING, SUSPENDED

AND SETTLEABLE SOLIDS - Free from substances that will produce distinctly visible turbidity, solids, or scum nor shall there be any formation of slimes, bottom deposits, or sludge banks attributable to waste discharges from municipal, industrial, or other sources including agricultural practices.

TASTE AND ODOR -

Taste and odor producing substances shall be limited to concentrations in the waters of the State that will not interfere with the production of potable water by reasonable water treatment methods, or impart unpalatable flavor to food fish, including shellfish, or result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the waters.

TOXIC SUBSTANCES -

None present in quantities that alone or in combination will be toxic to animal or plant life. In all cases the level shall not exceed the  ${\rm TLM_{96/10}}^{\bullet}$  Bioassay techniques will be used evaluating toxicity utilizing methods and species of test organisms suitable to the purpose at

<sup>1/</sup> State of Louisiana, Louisiana Stream Control Commission, State of Louisiana Water Quality Criteria, 1973.

hand. In cases where the stream is used as a public water supply, the level of toxic substances shall not exceed the levels established by the United States Public Health Service drinking water standards latest edition.

OILS AND GREASES -

There shall be no free or floating oil or grease present in sufficient quantities to interfere with the designated uses, nor shall emulsified oils be present in sufficient quantities to interfere with the designated uses.

FOAMING OR FROTHING MATERIALS -

None of a persistent nature.

NUTRIENTS -

The naturally occurring nitrogen-phosphorus ratio shall be maintained. On completion of detailed studies on the naturally occurring levels of the various macro and micro nutrients the State will establish numerical limits on nutrients where possible.

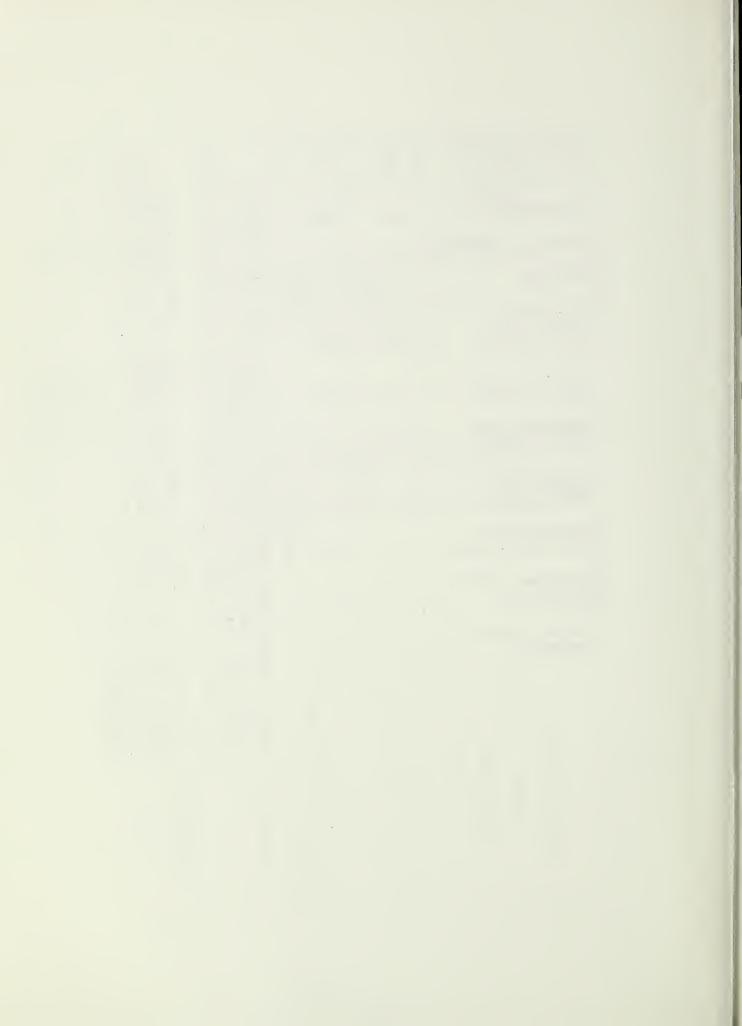
TOTAL DISSOLVED	0	0
SOLIDS (mg/1)	200	200
NOT TO EXCEED		
TEMPERATURE OC		
TEMPERATURE OC	32	32
BACTERIA STANDARDa/		7
pH RANGE DISSOLVED		
pH RANGE	0 0 0	0 0 0
님	6.0 to 8.5	6.0 to 8.5
S DISSOLVED		
OXYGEN (mg/1)	5.0	5.0
NOT LESS THAN	2	5
SULPHATE (mg/1)	<u></u>	5
NOT TO EXCEED	25	25
CHLORIDE (mg/1)	25	25
NOT TO EXCEED	2	2
DOMESTIC DAY		
DOMESTIC RAW		
WATER SUPPLY		
W DRODOCATION OF		
SPROPOGATION OF SFISH AND WILDLIFE	×	$\times$
SECONDARY CONTACT		
RECREATION	×	$\times$
3		
PRIMARY CONTACT		
RECREATION	×	
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RI		00
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SE	er	SS
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SP	×	a t wa
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	False River Lake	Bayou Grosse Tete - Headwaters to Intracost Waterways
	<u> </u>	M H 3

10 percent of the total samples during any 30-day period exceed 400/100 ml. content shall not exceed a log mean of 200/100 ml, nor shall more than PRIMARY CONTACT RECREATION - Based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform Standard # 1

content shall not exceed a log mean of 1,000/100 ml. nor shall more than 10 percent of the total samples during any 30-day period equal or exceed samples taken over not more than a 30-day period, the fecal coliform SECONDARY CONTACT RECREATION - Based on a minimum of not less than 5 2,000/100 ml. 2

Standard #

a/



#### APPENDIX I

#### COMMON AND SCIENTIFIC NAMES OF ANIMALS AND PLANTS MENTIONED IN THIS REPORT

#### Introduction

This appendix provides the scientific names of plants and animals discussed in the body of this report in order to avoid confusion often caused where only the common name is used. It is beyond the scope and requirement of this report to make and present an intensive survey of all plants and animals existing in the study area. In most cases, present populations status, trends, conditions, habitat requirements, and their relative importance or value are discussed where they occur in the text.

#### Birds

Barred owl Strix varia

Belted kingfisher Megaceryle alcyon

Blue jay
Cyanocitta cristata

Blue-winged teal Anas discors

Bobwhite quail Colinus virginianus

Brown thrasher Toxostoma rufum

Cattle egret
Bubulcus ibis

Common Crow
Corvus brachyrhynchos

Downy woodpecker
Dendrocopos pubescens

Eastern bluebird Sialia sialis

Eastern meadowlark Sturnella magna

Gadwall

Anas strepera

Great blue heron Ardea herodias

Common egret
Casmerodius albus

Hooded merganser
Lophodytes cucullatus

House sparrow
Passer domesticus

Little-blue heron Florida caerulea

Louisiana heron Hydranassa tricolor

Mallard Anas platyrhynchos

Mourning dove Zenaidura macroura

Pileated woodpecker Dryocopus pileatus

Red-headed woodpecker Melanerpes erythrocephalus

Red-shouldered hawk Buteo lineatus

Red-tailed hawk
Buteo Jamaicensis

Screech owl Otus asio

Southern bald eagle Haliaeetus leucocephalus

#### Reptiles

American alligator Alligator mississippiensis

Broad-banded water snake Natrix sipedon confluens

Canebrake rattlesnake Crotalus horridus atricaudatus

Common snapping turtle Chelydra serpentina

Diamond-backed water snake Natrix rhombifera

Eastern garter snake Thamnophis sirtalis sirtalis

Five-lined skink
Eumeces fasciatus

Gray rat snake

Elaphe obsoleta spiloides

Green anole Anolis carolinensis

Ground skink
Lygosoma laterale

Red-eared turtle
Pseudemys scripta elegans

Smooth softshell turtle Trionyx muticus

Southern copperhead Agkistrodon contortrix contortrix

Southern fence lizard Sceloporus undulatus undulatus

Stinkpot turtle
Sternothaerus odoratus

Western cottonmouth
Agkistrodon piscivorous leucostoma

# Amphibians

Bronze frog Rana clamitans

Bullfrog Rana catesbeiana

Central newt

<u>Diemictylus viridescens</u>

louisianensis

Dwarf salamander Manculus quadridigitatus

Eastern narrow-mouthed toad Gastrophryne carolinensis

Lesser Western siren Siren intermedia nettingi

Marbled salamander Ambystoma opacum

Small-mouthed salamander Ambystoma texanum

Southern cricket frog Acris gryllus gryllus

Southern leopard frog Rana pipiens sphenocephala Fowler's toad

Bufo woodhousei fowleri

Gray tree frog

Hyla versicolor chrysoscelis

Green tree frog Hyla cinerea Spring peeper Hyla crucifer

Three-toed amphiuma

Amphiuma means tridactylum

Upland chorus frog

Pseudacris triseriata feriarum

#### Mamma1s

Bobcat

Lynx rufus

Black bear

Ursus americanus

Cotton rat

Sigmodon hispidus

Cottontail rabbit

Sylvilagus floridanus

Coyote

Canis latrans

Fox squirrel

Sciurus niger

Gray fox

Urocyon cinereoargenteus

Gray squirrel

Sciurus carolinensis

Mink

Mustela vison

Nine-banded armadillo Dasypus novemcinctus

Nutria

Myocastor coypus

Opossum

Didelphis virginiana

Raccoon

Procyon lotor

Red bat

Lasiurus borealis

Red fox

Vulpes vulpes

Striped skunk

Mephitis mephitis

Swamp rabbit

Sylvilagus aquaticus

White footed mouse

Peromyscus leucopus

White-tailed deer

Odocoileus virginianus

#### Fishes

Bigmouth buffalo
Ictiobus cyprinelus

Black buffalo Ictiobus niger

Black crappie Poxomis nigromaculatus

Blue catfish Ictalurus furcatus

Bluegill Lepomis macrochirus

Flathead catfish Pylodictis olivaris

Freshwater drum
Aplodinotus grunniens

Gizzard shad Dorosoma cepedianum

Golden shiner Notemigonus crysoleucas

Green sunfish Lepomis syanellus

Lake chubsucker Erimyzom sucetta

Largemouth bass Micropterus salmoides

Longear sunfish
Lepomis megaiotis

Longnose gar Lepisosteus osseus

Pirate perch Aphredoderus sayanus Brook silverside Labidesthes sicculus

Bowfin Amia calva

Carp Cyprinus carpio

Chain pickerel Esox niger

Channel catfish
Ictalurus punctatus

Redear sunfish Lepomis microlophus

Spotted gar Lepisosteus oculatus

Smallmouth buffalo <a href="Ictiobus">Ictiobus</a> <a href="bubalus">bubalus</a>

Spotted sunfish Lepomis punctatus

Tadpole madtom
Notusus gyrinus

Threadfin shad
Dorosoma petenense

Warmouth Lepomis gulosus

White crappie Pomoxis annularis

Yellow bullhead Ictalurus natalis

### Plants Aquatics, Grasses, and Forbs

Alligator weed

Alternanthera philoxeroides

Arrowhead

Sagittaria sp.

Aster

Aster sp.

Bahiagrass

Paspalum notatum

Bermudagrass

Cynodon dactylon

Browntop Millet

Pamicum pamosum

Carpetgrass

Axonopus affinis

Cattail

Typha domingensis

Clover

Trifolium sp.

Johnson grass

Sorghum halepense

Lespedeza

Lespedeza spp.

Panicgrass

Panicum sp.

Paspalums

Paspalum spp.

Pondweed

Potamogeton spp.

Common ragweed

Ambrosia autemisifolia

Giant ragweed

Ambrosia trifida

Coontail

Ceratophyllum demersum

Dallisgrass

Paspalum dilatatum

Dock

Rumex crispus

Dove weed

Croton capitatus

Duck weed

Lemna minor

Fescue

Festuca arundinacea

Giant cutgrass

Zizaniopsis miliacea

Goldenrod

Solidago flaccidifolia

Senecio

Senecio glabellus

Sesbania

Sesbania exaltata

Sumpweed

Iva ciliata

Water hyacinth

Eichhornia crassipes

Ryegrass Lolium multiflorum

Sedges Carex spp. Waterprimrose Ludwigia sp.

Yankeeweed Eupatorium sp.

#### Shrubs and Vines

American beautyberry Callicarpa americana

Blackberry Rubus spp.

Buttonbush Cephalanthus occidentalis

Deciduous holly Ilex decidua

Devils walking stick Aralia spinosa

Elderberry Sambucus canadensis

Greenbrier Smilax spp.

Rattan
Berchemia scandens

Hawthorn Crategus spp.

Japanese Honeysuckle Lonicera japonica

Palmetto Sabal minor

Roughleaf dogwood Cormus drummond

Swampprivet
Forestiera acuminata

Switchcane Arundinaria gigantea

Trumpetcreeper Campsis radicans

# Trees

American elm
Ulmus americana

Bald cypress Taxodium distichum

Bitter pecan Carya aquatica

Black willow Salix nigra

Sugarberry (Hackberry) Celtis laevigata

Sweetgum
Liquidambar styraciflua

Sycamore Platanus occidentalis

Water locust Gleditsia aquatica Boxelder Acer negundo

Green ash
Fraxinus pennsylvanica

Live oak Quercus virginiana

Pecan (sweet)
Carya illinoensis

Water oak Quercus nigra

Water tupelo
Nyssa aquatica

Willow oak
Quercus phellos

Willow Salix spp.

# Cultivated crops

Cotton

Gossypium hirsutum

0at

Arens spp.

Soybeans
Glycine max

Sugarcane

Saccharum officinarum

Wheat

Triticum aestivum

Corn

Zea mays

APPENDIX J - CHANNEL WORK BY REACHES



APPENDIX J
CHANNEL WORK BY REACHES

Channel	Station	of C Type: of: Work:	Before	L Work
M-1	272+03 86+00 36+45 0+00	II II II	M M M M	E E S I
L-1B	196+00 160+00 74+10 0+00	III III III	M M M M	E E E S
L-1B1	75+10 42+75 0+00	IV IV II	M M M	E E E
L-1B1A	85+00 15+91 0+00	II VI	M M M	E E E
L-1B1A1	50+71 0+00	II	M M	E E
L-1B1B	61+00 21+00 0+00	II VI	M M M	E E E
L-1B1B1	9+40 0+00	II	M M	E E
L-1C (lower)	277+91 67+26 0+00	II II	M M M	E E S
L-1C1	12+45 0+00	VI VI	M M	E E
L-1C1A	91+00 30+00	I	0	E E

<sup>1/</sup> See "Coding System for Inventory
 of Channel Work," page II-J-7

	•		nvento	
<b>a</b> 1 <b>a</b>	:		hannel	
Channel	: Station		Туре	
			Chan.	
	:			:Before
	:	: :	Proj.	:Proj.
L-1C2	21+42	II	M	E
	0+00	II	M	E
L-1C (upp		II	M	E
	430+00	II	M	E
L-1C3	45100		14	70
T-TC2	45+00 0+00	II	M M	E
	0+00	11	M	E
M-2	215+00	II	М	E
	71+00	II	М	E
	44+47	VI	N	S
	12+73	II	N	S
	3+00	VI	N	S
L-2A	82+00	II	M	E
	15+00	II	M	E
	0+00	VI	M	S
L-2B	106+71	II	M	E
	0+00	II	М	Ē
				_
L-2C	56+00	II	M	E
	0+00	II	M	E
L-2D	75+50	II	М	E
1 20	0+00	II	M	E
	0100	**	M	10
L-2E	30+00	II	M	E
	0+00	II	M	E
M-3	197+84	IV	M	I
	0+00	IV	M	I
L-3A	60+10	II	М	E
- J11	24+00	II	M	E
	0+00	VI	M	E
	0.00	V JL	1.1	L

<sup>1/</sup> See "Coding System for Inventory
 of Channel Work," page II-J-7

-	:	: Inventory 1/			
-1 3	•	of C			
Channel	: Station				
	•			:Cond. :Before	
	<b>.</b>			:Proj.	
	•	•	110).		
L-3A1	96+00	I	0	E	
	0+00	I	0	E	
L-3A2	13+00	II	М	E	
	0+00	II	M	E	
L-3B	58+50	IV	М	E	
	30+30	IV	M	E	
	0+00	VI	M	E	
M-4	708+40	VI	M	E	
	654+60	VI	M	E	
	310+00	VI	M	I	
	0+00	VI	М	S	
L-4A	203+50	II	M	E	
	70+00	II	M	E	
	0+00	VI	M	S	
L-4Al	328+00	II	M	E	
	319+00	II	М	E	
	292+50	VI	М	E	
	0+00	II	M	E	
L-4AlA	190+00	II	M	E	
	15+00	II	M	E	
	0+00	VI	M	E	
L-4AlAl	83+00	II	M	E	
	0+00	II	M	E	
L-4AlB	160+00	II	М	E	
	120+00	II	M	E	
	0+00	IV	M	E	
L-4AlBl	28+00	II	M	E	
•	0+00	II	M	E	

<sup>1/</sup> See "Coding System for Inventory of Channel Work," page II-jag

	:		nvento		1/
	•			Work	
Channel	: Station	:Type:	Type	:Flow	
	:			:Cond.	
	•			Befor	е
	:	: :	Proj.	:Proj.	
L-4A2	125+00	II	М	E	
D-4N2	0+00	II	M	E	
	0.00		••		
L-4A3	105+00	II	М	E	
	0+00	II	M	Ē	
L-4B	191+50	II	M	E	
	24+50	II	M	E	
	0+00	VI	M	E	
L-4B1	130+00	II	M	E	
	0+00	II	M	E	
L-4C	95+00	II	M	E	
·	0+00	II	M	E	
T 470	20.00			_	
L-4E	38+00	II	M	E	
	0+00	II	M	E	
L-4E1	11+00	II	М	E	
T 4DT	0+00	II	M	Ē	
	0.00		•••		
L-4F	82+00	II	М	E	
	0+00	II	M	E	
L-4G	50+00	II	M	E	
	0+00	II	M	E	
L-4G1	14+00	II	M	E	
	0+00	II	M	E	
T 411	06100				
L-4H	96+00 47+50	II II	M M	E E	
	39+60	III	M	E	
	0+00	VI	M	E	
	0100	ν т	PI	ii.	
L-4I	39+00	II	М	E	
	0+00	II	M	E	

<sup>1/</sup> See "Coding System for Inventory
 of Channel Work," page II-J-7

	:	: Inventory 1 : of Channel Work			
Channel	: Station	: OI C			
	:	: of :	Chan.	:Cond.	
	: :			:Before :Proj.	
		<del></del>			
M <b>-</b> 5	655+00	II	М	E	
	0+00	II	M	E	
M-6	85+00	II	M	E	
	0+00	II	M	E	
M-7	90+00	II	М	E	
	0+00	II	M	E	
M-8	95+00	II	M	E	
	0+00	II	M	E	
M-9	152+00	II	М	E	
	103+60	II	М	E	
	18+00	IV	M	E	
	8+00 0+00	II VI	M M	E E	
	0+00	ν <b>Τ</b>	141	E	
L-9A	60+00	II	M	E	
	0+00	II	М	E	
L-9B	48+00	II	М	E	
	0+00	II	M	E	
M-10	115+00	II	М	E	
	0+00	II	M	E	
L-10A	25+00	II	М	E	
	0+00	II	M	E	
M-11	100+00	II	М	E	
	0+00	II	M	E	
M-12	218+00	VI	М	E	
	200+00	VI	М	E	
	50+00	II	M	E	
	0+00	VI	М	E	

<sup>1/</sup> See "Coding System for Inventory
 of Channel Work," page II-J-7

	: : Inventory 1 : of Channel Work			
Channel	: Station :	:Type:T : of :C :Work:B	han. :	Cond.
	:		roj.	
L-12A	82+60	II	M	E
	0+00	II	M	E
L-12B	95+00	II	M	E
	15+00	II	M	E
	0+00	VI	M	E
L-12B1	22+00	II	M	E
	0+00	II	M	E
M-13	165+00	II	М	E
	0+00	II	M	E
M-14	35+00	II	М	E
	0+00	II	M	E
M-15	25+00	II	М	E
	0+00	II	M	E
M-16	23+00	II	М	E
	0+00	II	M	E
L-16A	10+00	II	М	E
	0+00	II	M	E
M-17	64+00	II	М	E
	0+00	II	M	Ē
L-17A	12+00	II	М	E
	0+00	II	M	Ē
M-18	60+00	II	М	E
	0+00	II	M	E

<sup>1/</sup> See "Coding System for Inventory
 of Channel Work," page II-J-7

#### Soil Conservation Service

# Coding System for Inventory of Channel Work

#### Type of Work

- I establishment of new channel including necessary stabilization measures
- II enlargement or realignment of existing channel or stream
- III cleaning out natural or manmade channel
   (includes bar removal and major clearing
   and snagging operation)
  - IV clearing and removal of loose debris within channel section
  - V stabilization as primary purpose (by continuous treatment or localized problem areas). (Present capacity adequate)

## VI - adequate

# Type of Channel Prior to Project

- N an unmodified, well-defined natural channel or stream
- M manmade ditch or previously modified channel
- O none or practically no defined channel

# Flow Condition Prior to Project

- Pr perennial flows at all times except during
   extreme drought
  - I intermittent continuous flow through some seasons of the year but little or no flow through other seasons
  - E ephemeral flows only during periods of surface runoff
  - S ponded water with no noticeable flow, caused by lack of outlet or high ground water level.

